# 1987-89 Catalog

## Undergraduate and Graduate

the university of north carolina at charlotte

# Correspondence Directory

If, after reading this *Catalog,* you have further questions or wish to make specific inquiries about the programs of, or admission to, The University of North Carolina at Charlotte, please look below to find the proper office to contact. Address correspondence to any of the offices in care of:

The University of North Carolina at Charlotte
Charlotte, North Carolina 28223

**UNDERGRADUATE AND GRADUATE ADMISSION**

If you need information on admissions policies, application forms, or wish to make an appointment for an interview, please contact:

Office of Admissions
AC 704/547-2213

**STUDENT FINANCIAL AID**

If you need information on scholarships, work study, grants or loans, please contact:

Director of Student Financial Aid
AC 704/547-2461

**CAMPUS HOUSING**

If you have questions concerning housing on campus, please contact:

Director of Residence Life
AC 704/547-2585

**SUMMER SESSION**

If you need information about summer course offerings, please contact:

Office of Admissions
AC 704/547-2213

**EVENING COURSES**

If you need information about evening course offerings, please contact:

Registrar's Office
AC 704/547-2287

**CONTINUING EDUCATION**

If you need information about continuing education and extension course offerings, please contact:

Office of Continuing Education
AC 704/547-2424

**EMERGENCY NUMBERS**

Campus Police — Emergency ..... 547-2200
Director of Public Safety & Non-Emergency Calls ..... 547-2282
Health Services (radio contact with police) ..... 547-4617
Campus Operator ..... 547-2000
Mecklenburg County Police — Emergency ..... 9-911

# The University of North Carolina at Charlotte

## Undergraduate & Graduate Catalog 1987-89 Vol. XXI, No. 1

*The University of North Carolina at Charlotte is committed to equality of educational opportunity and does not discriminate against applicants, students or employees based on race, color, national origin, religion, sex, age or handicap. Moreover, The University of North Carolina at Charlotte is open to people of all races and actively seeks to promote racial integration by recruiting and enrolling a larger number of black students.*

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*Photography: Al Mahoney*

## *About This Catalog...*

*Although the publisher of this catalog has made every reasonable effort to attain factual accuracy herein, no responsibility is assumed for editorial, clerical, or printing errors or errors occasioned by mistakes. The publisher has attempted to present information which, at the time of preparation for printing, most accurately describes the course offerings, faculty listings, policies, procedures, regulations, and requirements of The University. However, it does not establish contractual relationships. The University reserves the right to alter or change any statement contained herein without prior notice.*

*Sixty thousand copies of this public document were printed at a cost of $52,858.15 or $.88 per copy.*

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# Academic Calendar 1987-88

Dates pertaining to changes in enrollment and refunds are included in the calendars that appear in the Schedule of Courses published each semester. These dates and a detailed calendar for the three-, five- and eight-week terms of the summer sessions are published during March.

## FALL SEMESTER, 1987

| | |
|---|---|
| Academic year begins | Sunday, August 16 |
| Orientation, advising, registration | Monday-Tuesday, August 24-25 |
| First class day | Wednesday, August 26 |
| Labor Day (no classes) | Monday, September 7 |
| Fall recess (no classes) | Monday-Tuesday, October 12-13 |
| Thanksgiving recess (no classes) | Wednesday-Friday, November 25-27 |
| Last class day | Friday, December 11 |
| Final examinations | Monday-Saturday, December 14-19 |

## SPRING SEMESTER, 1988

| | |
|---|---|
| Orientation, advising, registration | Monday-Tuesday, January 11-12 |
| First class day | Wednesday, January 13 |
| Spring recess (no classes) | Monday-Friday, March 14-18 |
| Last class day | Friday, April 29 |
| Final examinations | Monday-Saturday, May 2-7 |
| Commencement | Saturday, May 14 |
| Academic year ends | Sunday, May 15 |

## FIRST SUMMER TERM, 1988

| | |
|---|---|
| Registration | Wednesday, May 25 |
| First class day | Thursday, May 26 |
| Last class day | Wednesday, June 29 |
| Final examinations | Thursday-Friday, June 30-July 1 |

## SECOND SUMMER TERM, 1988

| | |
|---|---|
| Registration | Tuesday, July 5 |
| First class day | Wednesday, July 6 |
| Last class day | Tuesday, August 9 |
| Final examinations | Wednesday-Thursday, August 10-11 |

# Academic Calendar 1988-89

Dates pertaining to changes in enrollment and refunds are included in the calendars that appear in the Schedule of Courses published each semester. These dates and a detailed calendar for the three-, five- and eight-week terms of the summer sessions are published during March.

### FALL SEMESTER, 1988

Academic year begins ..... Tuesday, August 16
Orientation, advising, registration ..... Monday-Tuesday, August 22-23
First class day ..... Wednesday, August 24
Labor Day (no classes) ..... Monday, September 5
Fall recess (no classes) ..... Monday-Tuesday, October 10-11
Thanksgiving recess (no classes) ..... Wednesday-Friday, November 23-25
Last class day ..... Friday, December 9
Final examinations ..... Monday-Saturday, December 12-17

### SPRING SEMESTER, 1989

Orientation, advising, registration ..... Monday-Tuesday, January 9-10
First class day ..... Wednesday, January 11
Spring recess (no classes) ..... Monday-Friday, March 13-17
Last class day ..... Friday, April 28
Final examinations ..... Monday-Saturday, May 1-6
Commencement ..... Saturday, May 13
Academic year ends ..... Monday, May 15

### FIRST SUMMER TERM, 1989

Registration ..... Thursday, May 25
First class day ..... Friday, May 26
Last class day ..... Thursday, June 29
Final examinations ..... Friday, Monday; June 30, July 3

### SECOND SUMMER TERM, 1989

Registration ..... Wednesday, July 5
First class day ..... Thursday, July 6
Last class day ..... Wednesday, August 9
Final examinations ..... Thursday-Friday, August 10-11

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# The University

# The University

## GENERAL INFORMATION

The University of North Carolina at Charlotte is an established and growing comprehensive institution providing the excitement and opportunities of a modern metropolitan university. Enrollment has reached 11,750 and is expected to continue a modest and steady growth because of the dynamic setting in a metropolitan area of more than one million population.

UNCC provides a wide range of four-year degree programs and an increasing number of master's degrees and sixth-year programs designed to serve the educational needs of the citizens of North Carolina. A number of programs are offered in the evening, including graduate studies.

The University's enhanced reputation for high-quality teaching by regular faculty in classes of moderate size is bringing increasing numbers of students from across the state, from other states and from foreign countries. With a large concentration of foreign students, UNCC has one of the most active international studies programs in the country for an institution of its size.

A wide variety of lifelong learning opportunities is offered through UNCC's Continuing Education and Extension Office. Moreover, The University is dedicated to serving the urban community through its Urban Institute. Its relationship to the electronics and other firms in the adjoining University Research Park is a mutually beneficial arrangement and it is one of five participating universities comprising the Microelectronics Center of North Carolina (MCNC). WFAE-FM, a National Public Radio affiliate, provides further outreach to the community.

Despite its metropolitan setting, the campus covers approximately 1,000 acres of rolling hills with forests, streams and ponds. Contemporary buildings of unique design and landscaping are clustered at the central campus which is easily accessible from major interstates and other highways. The setting is enhanced by a planned community, University City, which comprises The University, University Place, University Research Park and University Memorial Hospital, adjacent to the campus.

The University was created by the 1965 North Carolina General Assembly, which transformed Charlotte College into a campus of the University of North Carolina. Now one of the 16 campuses of the University system, UNCC can trace its lineage to 1946 and the Charlotte Center of The University of North Carolina.

A team comprised of the chancellor, four vice chancellors and six deans gives leadership to The University and its six colleges — Architecture, Arts and Sciences, Business Administration, Engineering, Education and Allied Professions, and Nursing.

## PURPOSE STATEMENT

The University of North Carolina at Charlotte is the distinctively urban-oriented university of the state. It provides instructional, research and public service programs primarily to meet the educational needs of the citizens of North Carolina, and welcomes participation by scholars and students from other states and nations. As a comprehensive university, it is committed to a balanced curriculum in the liberal arts and sciences and selected professions. The University meets its responsibilities through campus programs and collaborative relationships with the human service, cultural, corporate, and governmental resources of the region.

The University offers baccalaureate, master's and post-master's programs in the humanities, social and behavioral sciences, physical and biological sciences and the professions of architecture, business administration, education, engineering and nursing. The primary commitment of The University is to informed and effective teaching. All faculties emphasize undergraduate instruction as the foundation upon which lifelong learning and advanced education are based and extend educational services by offering programs in the evening hours and at off-campus sites. Among the graduate and professional programs offered, those which serve the population of the metropolitan region are given special emphasis.

The distinctive responsibilities of The University influence the nature of the research and the types of scholarly endeavor and public service activity undertaken by its faculty members. Both basic and applied research and scholarship are valued and encouraged. Leadership in public service is provided through campus-based programs, consultation services, and participation in the programs of regional, national and international organizations.

The University is committed to excellence in its teaching, research and public service programs and the relationships that support and are supported by them. The policies and practices of The University are designed to promote in each of its members:

- attitudes and opportunities for creative, critical and independent inquiry;
- freedom from the limitations of ignorance, prejudice and intolerance;
- self-knowledge and an understanding of the relationships of the individual to society; and
- understanding of cultures and circumstances that differ from the familiar in location, time or values.

## GOALS STATEMENT

The University of North Carolina at Charlotte has as its strategic goal to be known as a comprehensive institution of higher learning:

- for students well prepared for University work through secondary school preparation or prior collegiate study and career experience;
- that offers top-quality instructional programs at the undergraduate and graduate levels;
- whose faculty is well qualified, student-oriented and is active in professional and scholarly endeavors and is supported by excellent campus facilities together with the intellectual and cultural resources of the State and region;
- that emphasizes individual intellectual development and career preparation to assist all its members to meet the needs of an increasingly technical, urban and international society.

To progress toward this strategic goal, The University sets as its primary goals for the period 1987-88 through 1991-92 the following:

1. To strengthen the instructional systems of The University;
2. To support efforts by the faculty of The University to improve the quality and effectiveness of their work;
3. To support student efforts to educate themselves;
4. To strengthen existing and to develop new relations with other educational, cultural, industrial-commercial, health and social service institutions of the Charlotte/Mecklenburg region and of the State of North Carolina; and
5. To strengthen the full range of liberal arts and sciences and the professional disciplines of The University and to extend the applied social and natural science programs.

## GOALS OF UNCC EDUCATION

Graduates of The University of North Carolina at Charlotte should be self-motivated individuals who are able to form, articulate, and act upon reasoned decisions in their personal, civic and professional lives. To this end they should (a) have a broad knowledge base as well as a more specialized knowledge base in their chosen area, (b) possess skills and capacities that can be applied to a variety of situations and professions in an ever-changing world, (c) understand the complexities and interrelationships between humans and their environment, and (d) possess a realistic understanding of their own potentials, limitations, and mental/physical development. All UNCC graduates should possess a general understanding of and appreciation for science and technology; literature and the arts; the individual, society, and culture; and the interrelationships among these.

In order to meet those goals of UNCC education, students engage in programs designed to develop understandings, skills, and capacities in the following six interrelated major areas:

**I. Communication**
**II. Problem Solving**
**III. Understanding Values**
**IV. Understanding Science and Technology**
**V. Understanding the Arts, Literature and Ideas**
**VI. Understanding the Individual, Society and Culture**

## ACCREDITATION

UNCC is fully accredited as a total institution by the Southern Association of Colleges and Schools and is a member of the North Carolina Association of Colleges and Universities. Various programs within The University are accredited by the appropriate specialized accrediting agencies. The College of Architecture is accredited by the National Architectural Accrediting Board. The programs in business and accounting are accredited by the American Assembly of Collegiate Schools of Business. The University's program for teacher education is approved for teacher certification by the North Carolina State Department of Public Instruction and is accredited by the National Council for Accreditation of Teacher Education. Programs within the College of Engineering are accredited by the Accreditation Board for Engineering and Technology. The Nursing program is accredited by the National League for Nursing and approved by the North Carolina Board of Nursing. The Department of Chemistry is on the approved list of the American Chemical Society.

The University is a member of the Council of Graduate Schools in the United States and the Conference of Southern Graduate Schools.

## ACADEMIC STRUCTURE

UNCC is organized into four administrative divisions: Academic Affairs, Business Affairs, Development and Public Service, and Student Affairs. The Division of Academic Affairs includes the Library, Computing Services, Educational Support Services, Enrollment Services, the Office of Continuing Education and Extension, the Center for International Studies, the Graduate School and six colleges, the Colleges of Architecture, Arts and Sciences, Business Administration, Engineering, Education and Allied Professions, and Nursing. The colleges offer more than 40 undergraduate and 20 master's degree options and sixth-year Certificate of Advanced Study programs through the departments and programs listed by college in the "Courses of Study and Special Programs" section of this *Catalog*. Many of the departments throughout The University are involved in teacher education. The College of Education and Allied Professions, advised by the University Teacher Education Committee, is responsible for these programs.

## EVENING COURSES

The University schedules its course offerings from 8 a.m. through 10:30 p.m. Monday through Thursday and 8 a.m. through 5 p.m. on Friday. A well-rounded selection of courses is available in the evening. A substantial majority of courses approved for graduate credit are taught in the evening. Course descriptions indicate courses expected to be offered in the evening during the period of this *Catalog*.

**A schedule of evening course offerings may be obtained from the Registrar's Office.**

## SUMMER COURSES

UNCC schedules a variety of course offerings during its Summer Sessions which are held each year beginning in May and ending in mid-August. These courses are scheduled in two five-week terms and overlapping three- and eight-week terms. A special session is offered for teachers and other school personnel. Regular course offerings are supplemented by short-term courses, institutes and workshops. Continuing students, visitors or students from the community should find their needs answered by offerings from many disciplines. Information about summer courses may be obtained from the Office of Admissions (AC 704/547-2213).

## PRIVACY OF STUDENT EDUCATIONAL RECORDS

Federal law (the "Buckley Amendment") creates for students the following rights with respect to their education records:

1. To inspect and review information contained in records.
2. To challenge the content of the records.
3. To a hearing if the outcome of the challenge is unsatisfactory to the student.
4. To submit an explanatory statement for inclusion in the record if the outcome of the hearing is unsatisfactory.
5. To prevent disclosure, with certain exceptions, of personally identifiable information.
6. To secure a copy of the UNCC policy on education records, which lists the locations of all education records maintained by The University.
7. To file complaints with the U.S. Department of Education concerning alleged failures by the institution to comply with the Buckley Amendment.

UNCC intends to comply fully with those requirements. Policy Statement No. 69, "The Privacy of Educational Records," explains the procedures for compliance. Students may obtain copies of the Policy in the Office of the Registrar, and copies of the Policy Statement are available for inspection in the offices of each dean and department chairperson. The Policy includes a list of the locations of all education records maintained by the institution.

The following categories of personally identifiable information about students have been designated as public or "directory" information which may be disclosed for any purpose without student consent: name, local and permanent address, telephone number, date and place of birth, major field of study, dates of attendance, degrees and awards (including scholarships) received, participation in officially recognized activities and sports, and weight and height of members of an athletic team.

Currently enrolled students may withhold disclosure of information in any category by completing the appropriate form available in the Office of the Registrar. Written requests for nondisclosure will be honored for a maximum of one year, and all such requests will expire on the following August 31.

UNCC assumes that failure to complete the request indicates approval for disclosure.

All questions concerning this UNCC policy on educational records may be directed to the attention of the Director of Enrollment Services.

## EQUAL OPPORTUNITY

The University of North Carolina at Charlotte is dedicated to equality of opportunity within the University community. Discrimination based on sex, race, color, national origin, religion, age, or handicapped status is not condoned and shall not be practiced against students, employees or applicants.

Further, The University of North Carolina at Charlotte supports the protections available to members of the University community under all applicable federal laws, including Title VI and VII of the Civil Rights Act, Title IX of the Educational Amendments, Sections 799A and 845 of the Public Health Service Act, the Equal Pay and Age Discrimination Acts, the Rehabilitation Act of 1973, and Executive Order 11246.

The University has a published Affirmative Action Plan. It has completed a self-evaluation of current policies and procedures to insure compliance with the requirements of Title IX of the Educational Amendments of 1972 and it has completed the compliance report required by Section 504 of the Rehabilitation Act of 1973. Copies of these documents have been placed on reserve in the UNCC library.

Both informal and formal grievance procedures have been established for use by any member of the University community who feels discrimination by any segment of The University.

# Facilities and Services

## THE CAMPUS

The campus is located about two miles from the Charlotte city limits on NC 49 near its intersection with US 29, and only eight miles from the interchange of Interstates 85 and 77. Campus facilities are comprised of air-conditioned contemporary buildings, all of which were constructed within the last 25 years. In addition to classrooms and well-equipped laboratories, The University offers outstanding arts and athletic facilities, cafeterias, and residence accommodations. Grounds are beautifully landscaped with a variety of flowers and shrubs and lovely wooded gardens. The campus is designed for the pedestrian and it only takes a few minutes to walk from one side of the campus to the other. All facilities are generally accessible to students with disabilities.

A map of the campus is included on the inside back cover of this *Catalog*. The Reese Building houses many administrative offices, including Admissions and the Registrar's Office.

**Parking and Traffic** is the responsibility of the Traffic Division in the Department of Public Safety, located in the King Building. All persons desiring to park motor vehicles on campus are required to purchase and display a University parking permit. Permits designate specific parking area, depending upon the individual's classification as resident, commuter, faculty or staff. Night decals are available by the semester and are valid in any non-metered or reserved lot after 4 p.m. Persons with a night permit must pay to park at meters or toll gates between 8 a.m. and 4 p.m. Presentation of state vehicle registration or appropriate proof of ownership is required to obtain a permit. Permits do not guarantee a space will be available nor do they reserve a specific space, except in the case of handicapped individuals. Parking meters and toll gates are available for visitors on campus. Temporary permits are available from the Traffic Office for new employees, guests, and for vehicles being used while a registered vehicle is being repaired and/or other valid reasons for a period not to exceed two weeks. Two dollars per week will be charged for each additional week. Abbreviated copies of the *Campus Traffic and Parking Regulations* are available from the Traffic Office for the asking or when purchasing a permit. For information on fees for motor vehicle registration and parking, see the chapter "Financial Information."

*The Charlotte Transit System* provides bus transportation from the Square in uptown Charlotte and from Southpark Shopping Center (via Eastland Mall and the apartment complexes along Barrington Drive). Service is provided on a regular schedule connecting with established routes throughout the city. Detailed information regarding routes, schedules and TRAC passes may be obtained in the Traffic Office, 134 King Building. Fees are set by Charlotte Transit and are subject to change.

**Police Services** to the University community are provided 24 hours a day, seven days a week. Campus police officers are commissioned by the Attorney General of North Carolina and have full police powers on campus. Ninety percent of these officers are or have been college students, either at UNCC or other institutions, and are sympathetic to the problems of students. The primary responsibility of the Police Department is performing traditional law enforcement roles in prevention of crime, enforcement of laws, protection of life and property, preservation of peace and apprehension of criminals.

The Department includes an Investigative Division to which information regarding criminal activitiy should be directed. Prompt, confidential attention will be given. A Crime Prevention and Public Awareness Office in the Department is designed to educate the public in the best ways to protect themselves and their property. Realizing that people frequently call the police officer when they know of no one else to call, the Department takes pride in being available, capable and willing to respond to each situation presented regardless of how small it may seem. Awareness and quick reaction enhances the crime prevention program by discouraging the commission of crime.

Access to academic buildings and rooms during non-class hours may be gained only with the written permission of a faculty member. University police must be contacted to gain entrance into locked rooms. To contact campus police, call 547-2200 in the Department of Public Safety.

**Safety Services and Accident Prevention** are the concerns of the Safety Services Division in the Department of Public Safety. It is the responsibility of the Department to investigate accidents on campus, conduct safety inspections of all buildings, maintain all reports required by the N.C. Department of Labor and to generally ensure that all persons within the University community are provided with a safe and healthful environment, conducive to the prevention of illness or injury.

Those who have complaints or knowledge of safety hazards are invited to bring them to the attention of the Safety Services Division without fear of retaliation. All complaints or notification of hazards will be acted upon and the employee or student notified of the response.

## EDUCATIONAL SERVICES AND FACILITIES

The University offers a wide range of services and facilities designed to maximize and facilitate academic pursuits, enhance study and learning abilitites, and focus on areas that are of special interest to students and the University community.

**The J. Murrey Atkins Library,** located near the center of the campus, houses an open-shelf collection which includes over 420,000 bound volumes, 850,000 units in microform and approximately 750,000 manuscripts in closed stacks. The Library of Congress classification system is used for the arrangement of books and periodicals, and an online catalog provides access to a substantial portion of the collection.

Atkins Library meets the informational needs of the University community by offering a variety of services. A staff of 68 people, including 20 librarians, acquires, organizes and services the collections. Reference librarians provide assistance to users in locating information and in the use of library. The reference staff also offers an active library instruction program which reaches numerous University classes, and a computerized reference service which provides access to hundreds of remote databases. Interlibrary Loan provides access to materials that are not contained in the Library's collection.

A number of special collections are available. A selective depository of U.S. publications since 1964, Atkins Library has over 460,000 federal government documents. The North Carolina documents collection, begun in 1976, is a rapidly growing collection of publications of state government agencies. In 1984 the Library was designated a depository for City of Charlotte and Mecklenburg County publications. The Local Public Documents Room Collection for the McGuire Nuclear Plant on Lake Norman is located in the Library. Atkins Library is also a depository of U.S. Geological Survey and Defense Mapping Agency maps. The collection consists of over 38,400 maps.

The Mary and Harry L. Dalton Rare Book and Manuscript Reading Room houses collections of rare books, official University records, historical manuscripts, and oral history tapes. The Rare Book Collection, numbering some 4,200 volumes, contains literary first editions, historical children's books, fine press books, and more than 1,000 English plays of the 17th, 18th, and early 19th centuries. The University Archives includes administrative files, theses, photographs and other material relating to the history of The University. The manuscript collections document the contemporary social, political and architectural history of the Metrolina region. Included in these collections are papers of Harry Golden, editor of the *Carolina Israelite;* files of attorney Julius Chambers relating to the precedent-setting *Swann v. Charlotte/Mecklenburg Board of Education* case, which established busing as a constitutional means of desegregating schools; papers of Kelly Miller Alexander, former national chairman of the NAACP; and files of several mayors of Charlotte. An Oral History Program, also administered by the Library, has conducted interviews with a number of local citizens and state leaders. Tapes and transcripts of these interviews are available for use.

Other collections include audio-visual software and the Curriculum and Instructional Materials Center which contains K-12 teacher education materials. Atkins Library is a Teacher Resource Center for select NASA educational materials. In addition to materials directly related to classroom and research work, the Library provides students with general and recreational reading materials; exhibits and displays presenting ideas and issues are also a regular part of an on-going service program. Dispersed throughout the premises is an excellent art collection which includes sculpture, oils, lithographs, watercolors and etchings.

The Friends of UNCC and individual donors have played a significant role in developing and contributing to the growth of the Library's collections.

**Media Services,** administered by the Library, is located in Atkins 200. It offers a wide range of audio and visual services for both students and faculty engaged in University functions. The production staff is capable of producing color slides, overhead transparencies, black and white photographs, audio and video recordings and multi-media programs.

Media Services loans audio-visual equipment for short-term use to students and faculty. Equipment includes motion picture projectors, slides and filmstrip projectors, overhead and opaque projectors, audio and video recorders, public address systems, record players, and projector screens.

There is a satellite equipment distribution center located in Denny 214. An audio studio and small television studio are available for use. The unit also manages a highly sophisticated teleconference and teleclassroom facility in conjunction with the Microelectronics Center of North Carolina. Professional assistance is available on request. The Library's collection of 16mm films is located in Media Services. The unit also manages the film preview program and handles requests for loans from the State's film-lending service. The staff offers a wide variety of workshops on television production, slide duplication, dry mounting, laminating, thermal and diazo transparency production, projector operation, audio and video tape recording and instructional development.

**Computing Services,** located on the ground floor of the Atkins Library Annex building, supports The University's instructional and research computing activities as well as providing administrative computing in the operation of The University. Academic Computing includes course programs at the undergraduate and graduate levels in the use of various computer techniques and languages as well as research at the graduate level involving the use of an extensive software library. Computing laboratories located in several campus buildings provide access to a variety of IBM and Apple microcomputers and minicomputers (Digital VaxStations and B1955). Terminal access is provided to the University's mainframes (Burroughs A9 and IBM 4381) and superminicomputers (VAX-11/780 and Harris H800). Terminal access to the Triangle Universities Computation Center (TUCC) IBM 3081 and attached FPS-164, the Microelectronics Center of North Carolina (MCNC) superminicomputers, and the NSF Supercomputer network provides additional computing capacity, software and databases.

Use of computers is widespread at UNCC. Examples include the study of programming languages and the use of databases in computer science; computer-aided engineering and graphics in engineering; teaching introductory statistics in mathematics; statistical analysis of data files in sociology, history, political science and psychology; transportation problem solving in geography; molecular analysis in chemistry; and computer assisted instruction at the Writing Resources Center.

**Educational Support Services**

Educational Support Services promotes programs, services and activities designed to support and enhance the educational experience of students. Coordinating and integrating existing services is a primary function of this unit, as is the development and expansion of new programming areas.

**Learning Assistance Services,** part of the Educational Support Services program, provides academic support services to students, faculty and staff from several campus locations. The offices are open Monday through Friday from 8 a.m. to 5 p.m. and offer a number of programs and services to assist individuals who want to learn more in less time, and with greater ease and confidence. Noncredit groups and mini-courses on a variety of study skill topics are offered in various campus locations and in the residence life areas. Peer tutors are provided for courses in chemistry, biology, physics, engineering, mathematics, computer science, foreign languages and other areas as needed. Presentations are given to classes, organizations and other groups and Learning Assistance Services staff members teach the Learning Skills Instruction course (EDUC 1140) offered by the College of Education and Allied Professions.

Main Offices are located in Atkins 32. Services include: (1) diagnostic testing in reading comprehension and vocabulary, reasoning and thinking ability, study skills and learning style, with counseling concerning ways to work on skill improvement; (2) admissions test preparation for graduate, medical or professional schools; and (3) special assistance for reentering students and international students through scheduled group and individual appointments. Facilities include a large, well-equipped learning laboratory with resources and materials for learning skill development in such areas as time management, vocabulary development, comprehension in specific subject areas, critical thinking and problem solving, listening and notetaking, concentration and memory, and test-taking. Learning approaches used in the Center include self-paced materials, audio-visuals and computer-aided instruction. Handouts provide "mini-lessons" on study/learning skills.

**Supplemental Instruction,** located in Physical Science Building rooms 102 and 103, is a program designed to help students succeed in the introductory mathematics and science courses that are typically "high risk." Special tutors meet with groups of students several times weekly to discuss course content as well as the specific study skills needed for academic success.

**Disabled Student Services,** located in Winningham 106, provides special assistance in reading, writing, taped textbooks, special test administration, academic counseling, and other individual

support services for students with a learning disability or a physical handicap. A peer support group meets regularly, and special mini-courses are offered to improve academic study skills and to aid in preparation for job entry.

Pre-admissions counseling is encouraged. All students with impaired sensory, manual, or speaking skills requiring assistance should contact the Office of Disabled Student Services as early as possible to ensure University capability in meeting their needs. UNCC, a relative new and modern campus, is generally accessible to persons with disabilities. Every effort will be made to accommodate special requirements as necessary or feasible. The Office shall work with the student in locating any necessary educational auxiliary aids. The University shall not assume any responsibility for the provision of attendants, individually prescribed devices, readers for personal use or study, or any device or service of a personal nature. The arrangements for these types of services are entirely the responsibility of the individual student and should be established well in advance of the time such services are to begin. To contact Disabled Student Services, telephone AC 704/547-4354.

Students who have grievances related to The University's delivery of special services for disabled persons should process the grievance in accordance with procedures on file in the Office of Disabled Student Services.

**Writing Resources Center (WRC)**, located in Denny 217, is a service provided by the English Department to help students and other members of the University community improve their writing skills. The WRC is staffed by graduate and undergraduate tutors prepared to help the individual learn prewriting strategies, understand the writing process, develop a thesis, strengthen the focus of a paper, create effective introductions and conclusions, revise drafts, identify and correct grammatical errors, and recognize strengths and needs. The WRC provides one-on-one tutoring; small group workshops focusing on specific topics; reference books, handbooks and professional writing texts which may be checked out; word processing equipment and computer-assisted instruction; worksheets and exercises for individual instruction concentrated on grammatical problems; and resume-writing guidelines. The WRC is open Monday through Thursday 9:00 a.m. to 9:00 p.m., and from 9:00 a.m. to 2:00 p.m. on Friday.

**The Office of Continuing Education and Extension**

Continuing Education bridges the teaching resources of The University and instructional needs of citizens who are not full-time or campus-based students. As a public university located in the Carolinas' major population center, UNCC has an obligation to provide for the continuous education of adults in the Lower Piedmont. The office collaborates with The University's six colleges to provide degree-related instruction at locations away from the UNCC campus as well as short courses for continuing professional development and personal enrichment. Call the Office of Continuing Education and Extension at AC 704/547-2424 for specific information about UNCC's instructional outreach.

*The Extension Program* offers courses for academic credit to students unable to attend regular University classes. In order to accommodate the needs of professional or otherwise non-traditional students wishing to take degree-related credit courses, classes are held typically in the evenings or on weekends off-campus. Extension courses are offered in cooperation with and by approval of the academic department awarding the credit.

*The Continuing Education Program* conducts courses, seminars and institutes in response to specific community needs. Usually short and specific, continuing education is designed for training and development among the professions and for personal enrichment among the general public. Such programs, taught on- and off-campus, do not award academic credit but may qualify for Continuing Education Units. The CEU is a nationally recognized measure of a non-credit educational experience. Continuing Education courses draw on qualified instructors, usually from The University, occasionally from the community. The University welcomes requests and proposals for appropriate Continuing Education activities.

**Center for International Studies**

The Center for International Studies offers a diversity of academic and cultural programs to enhance the learning experience of the University community. A minor in International Studies allows students to pursue an interdisciplinary and comparative study of foreign cultures and societies while they fulfill the academic requirements for a major in one of the approved University degree programs. (See page 225 for complete information.)

*Travel and Study Abroad.* The Center for International Studies offers UNCC students the opportunity to travel and study abroad either for a year, semester, or summer term. Programs during the summer are arranged in a variety of countries each year. A student should contact the Center for International Studies no later than March 30 to be considered for a summer travel/study program. (See page 323 in Courses of Study and Special Programs for additional information on study abroad and student exchange opportunities.)

The Center also serves as a facilitator in the development of faculty exchange opportunities. Faculty are encouraged to work with the Center's staff in exploring and applying for a wide range of international exchanges. Among those are the Fulbright Exchange Program, reciprocal department exchanges, and exchanges based on agreements between UNCC and overseas institutions of higher learning. Faculty and administrators are also able to take advantage of the Center's professional development program. This program provides opportunities for the further enhancement of international interests through travel for international study and research and faculty colloquia on international topics.

*International Student Services* are designed to respond to a diverse population having special needs in the areas of immigration, language, campus orientation, and cultural understanding. The focus of services include UNCC students, English Language Training Institute students, other international students, and faculty on an immigrant visa. Major programs include orientation, individual assistance with academic and personal questions, immigration matters, and campus and community services.

*Campus Programming.* A series of annual and one-time events is sponsored independently and in cooperation with other departments and agencies. They include the annual International Festival, International Club, International Student Study Programs and Summer Institutes, and a variety of international programs relevant to international student concerns. Examples include lectures, Model United Nations, and food day celebrations.

*The English Language Training Institute (ELTI)* provides intensive English instruction both for international students planning to attend American universities or colleges and for those individuals purusing professional training in the United States. ELTI holds three sessions per year—fall, spring, and summer—and offers four language proficiency levels: basic, intermediate, advanced and academic preparation. Class size is limited to 15 students, and students attend class 20 hours per week. Exceptional students in the academic preparation level may take one course which carries up to three academic credits in The University.

ELTI also offers the Summer Institute for International Teachers of English. This program provides international teachers with intensive training in English as a Second Language methodology. In addition to course work, the Summer Institute emphasizes orientation to American culture through social events, trips and other activities.

*Public Service.* The Center seeks to initiate and respond to the international needs and interests of the community. Current programs include: (1) *Community Forums* — symposia on topics of current international interest; (2) *Great Decisions* — an annual series of lecture/discussions during the months of February and March on eight key policy issues; (3) *International Business Workshops* — programs focusing on specific aspects of international trade, e.g., letters of credit, customs regulations, international marketing, documentation, and foreign trade zone; (4) *Carolinas Council on World Affairs;* (5) *Community-based Programs* having an international focus, such as the Host Family Programs for foreign students, Bi-Lingual Education program in the Charlotte-Mecklenburg Schools, International Youth Exchange, and the International Information Center; and (6) service to individuals and community organizations for international information and program development.

**The Chimney Rock Park Field Station** is located in the Blue Ridge Mountains, 30 miles southeast of Asheville. The University has an agreement with Chimney Rock Park to investigate the biological, geological and cultural features of the 800-acre park. Area available for study extends from the Broad River at the bottom of Hickory Nut Gorge to the top, a vertical climb of over 1,500 feet. Internships for research-park employment are available through the Scientific Advisory Board in care of the Department of Biology.

**The UNCC Experimental Ecological Reserve** is a 100-acre tract of land set aside on campus by the UNCC Board of Trustees as a permanent ecological reserve for use as an outdoor classroom and laboratory. The reserve includes an eight-acre old field, pine stands, mixed pine-hardwood forest, and a relatively undisturbed ten-acre watershed of oak-hickory forest.

## STUDENT AFFAIRS

The University of North Carolina at Charlotte provides an environment for students that is conducive to study and the pursuit of knowledge as well as comfortable and enjoyable. A variety of services and facilities are offered to meet the needs of students.

**The Bonnie E. Cone University Center** serves as the hub of activity for informal gatherings and social and educational activities on campus and provides an attractive, comfortable place for relaxation and study. Services and facilities available include the Student Activities Center, art gallery, gameroom and outdoor equipment rental, information desk and music listening lounge, TV/Video Lounge, the Candy Shoppe and concert and discount movies tickets center, 24-Hour Program Hotline, and meeting rooms and facilities for dances, lectures, concerts, films and banquets.

Also located within Cone University Center are the offices of the Student Body Government, *49'er Times, Sanskrit, Etc. Magazine,* Black Student Union, University Program Board, Venture Program, Campus Programs, Student Activity Fees Clerk, National Student Exchange, I.D. Office, Food Service and the administrative offices (includes University Facility Reservations and Conference Services) for the University Center.

**The Rathskeller** is located beneath the Residence Hall Cafeteria. It can be reserved for dances and other events. The UPB (University Program Board) Entertainment Committee offers a wide variety of entertainment including name musical and novelty acts, lectures, movies and minority programs.

**The I.D. Office** is co-located with the Food Service Office just outside the entrance to the cafeteria in Cone University Center. Hours are 7 a.m. to 7 p.m. Monday through Friday.

All students and faculty/staff are issued permanent-picture I.D. cards that are automatically revalidated by computer. Temporary and dependent I.D. cards also are provided. Lost cards should be reported to the I.D. Office immediately (telephone 547-2216). A $10 charge is made for replacement cards.

**The Bookstore** offers new and used textbooks, non-required special interest and gift books, school supplies, computer-related equipment, greeting cards, gifts and clothing items. Services include sale and development of film and special ordering of books not carried in stock.

**University residence halls, suites and apartments** offer students an experience filled with opportunity. Four high-rise halls house approximately 500 students each. Each room includes study and sleeping areas for two students and is equipped with built-in dressers, study desks, chairs and closets. Each floor has a central lounge plus study, typing and seminar rooms. Two elevators service each air-conditioned building. Each building also contains an office for the full-time professional staff (residence coordinator), student mail boxes, a concessions area, a lounge and a laundry room. A meal plan is required with high-rise residence.

Suite housing offers the same potential for growth as the high-rise halls and provides more privacy. Two students share a double room and four students share a bath and a den area. This lifestyle also requires participation in a meal plan.

On-campus apartments offer an alternative to group living without the disadvantages and expense of commuting. They offer students a more private living environment and require a more self-reliant lifestyle. Each apartment is a four-bedroom unit, with one student assigned to each bedroom. The four students share a bathroom area and kitchen complete with cooking facilities and living/dining space. The apartments are designed to be as like the "outside world" as possible. A meal plan is optional, allowing students the experience of buying and preparing their own food, if they so desire. *(Note: freshmen are not eligible for the apartment lifestyle.)*

A 12-month Apartment Living Agreement is available for students provided they are enrolled with full-time student status (12 or more hours undergraduate, 9 or more hours graduate) in the spring semester prior to and the fall and spring semester during the 12 months covered by this agreement. If the student is pre-registered for the upcoming fall term, he/she is not required to enroll during the summer sessions. Housing for the 12-month student is located in campus apartments; therefore, freshmen are not eligible. For information and/or a contract for 12-month housing, contact the Residence Life Office.

The University does not require students to live on campus. A student who plans to live on campus should apply as soon as possible as assignments are made based on date of receipt of contract.

An application for housing will be sent to the entering student at the time of his or her final admission to The University. A $100 deposit must be returned with the application to the Director of Residence Life.

*Housing facilities designed specifically for disabled students in wheelchairs* are available. Wheelchair students who receive residence hall space confirmation have priority in assignment to these facilities *as long as The University is able to offer space.* It is extremely important that the housing application is received before all space is committed so that this priority for assignment to handicapped facilities can be exercised. Wheelchair students may be considered for priority status on the waiting list on the basis of (1) the date of application and (2) the degree of utilization of wheelchair-equipped facilities as compared to the proportion of wheelchair students who apply.

The University does not assume any responsibility for the provision of attendants for disabled students. Such arrangements are entirely the responsibility of the individual student and should be established well in advance of the time such services are to begin.

**Food Service.** Resident students living in Sanford, Moore, Holshouser, Scott, Hawthorne, Hickory, Cedar, Sycamore and Oak *must* have a food service contract for either the 19-meal plan (7 days a week) or the 14-meal plan (7 days a week). These students may take their meals at any of the boarding cafeterias. A dollar allowance is given for certain meals if the student wishes to eat in other food service facilities on campus and pay cash for anything over the established amount.

Resident students living in apartments (Phase I, II, III or V-A) and commuter students may purchase a 19- or 14-meal plan *or* one of the following plans: 10-meal plan (7 days a week) or a 5-meal plan (Monday through Friday).

Once a meal plan has been selected, *changes will be made only under the following conditions:* (1) A plan can be changed during the period of room change as announced by Residence Life or when a student moves from a required area to an optional area. (2) The student withdraws from The University. Any exception to the above must be approved by the Business Manager for Auxiliary Services and will result in a debt service charge. **Note:** All meal plan changes must be made in the Auxiliary Service Office, 422 Reese Building.

Anyone may purchase individual meals for cash at any of the boarding cafeterias. Vending machines are located throughout the campus, and several locations have microwave ovens for heating items.

**The Counseling Center** provides services and programs to assist in individual and group growth, career development and personal adjustment problems. Staffed by professionally trained psychologists and counselors, the Counseling Center offers services to students, faculty and staff without cost. Initial counseling appointments may be arranged in Room 06 of the Atkins Building or by calling 547-2104. Information between an individual and his/her counselor is confidential in accordance with State guidelines. No information is released without a person's written permission, and no information is entered into a student's permanent college record.

The aim of the Counseling Center is to assist the individual in resolving current problems and to help the person gain self-understanding that promotes personal growth. The counseling process is individualized for each person to meet his/her particular needs and may include a variety of services such as personal counseling, career development, group counseling and/or testing. Individual counseling is provided to help a person develop better coping strategies, resolve conflict and handle crisis situations. Career counseling assists the person in exploring interests, work values and abilities through individual counseling sessions, career exploration groups and utilization of the career information library. Each semester, groups are offered which are designed to teach a skill or are focused on a particular theme. Examples include assertion training, stress management and personal growth. The administration of career interest inventories, personality surveys and achievement tests provide an additional method of self-exploration for students. Tests are selected only after a careful discussion between the individual and the counselor and are available at no cost.

Outreach and consultation are vital functions of the Counseling Center. Staff members are available to consult with faculty, staff and student organizations on topics such as enhancing communication, improving the learning environment and helping the problem student. Outreach activities include programs conducted outside the Counseling Center to meet the need of a group or organization. These programs usually focus on personal development, career development and educational skills training.

**The Brocker Health Center** provides comprehensive out-patient medical care to all students, with facilities for laboratory and X-ray studies, hearing and vision testing, allergy injections and injury rehabilitation. Specialty clinics for birth control, sports medicine and orthopedics are also available.

The Health Center is fully operational between the hours of 8:30 a.m. and 5:00 p.m. with physicians and support staff on duty Monday through Friday. From 5:00 p.m. to 10:00 p.m. registered nurses are available for assistance and referral. The Health Center is staffed by an R.N. on weekends from 1:00 to 5:00 p.m. and on some holidays.

Seriously ill students and emergencies will be referred to the University Memorial Hospital or other appropriate in-care facility. Students and parents are urged to review their insurance plans to be sure they have adequate coverage for confinement or emergency treatment at these facilities. Insurance is available through The University with a plan designed for students. Information about this plan is sent to all students during the summer.

Students coming to the Health Center must bring a current University Identification card. The Student Health Fee covers most of the cost of Health Center services. Additional fees are charged for X-ray, family planning, lab and orthopedic services. Fees change from year to year. Call 547-4617 for further information.

**The Placement Office** (located in Room 132, King Building) functions as the central placement agency for the campus and serves undergraduates, graduate students and alumni by assisting them in developing their career objectives (preferably beginning with their admission to The University) and in obtaining employment. Services include career planning and guidance; advising on the techniques of employment prospecting, on job selection and analysis, on interviewing, on the preparation of resumes and writing of business letters; maintaining, for student browsing, files of information on prospective employers (business firms, governmental agencies, school systems) and on graduate school fellowships and assistantships; providing liaison between employers or graduate schools and UNCC degree candidates through on-campus recruiting by employers and graduate school representatives and by individual referral of prospective graduates and alumni to current employment openings.

Students who wish to earn part of their educational expenses or to gain work experience may register for part-time, full-time or summer employment off campus. Every effort is made to assist the student who expresses a need for employment and, where possible, to place the student in a position relating to his/her vocational goal.

Degree candidates register with the Placement Office on a voluntary basis early in their graduating year by completing a data sheet and requesting three professors and/or employers to complete evaluations on forms provided by the Placement Office. At the present time, these credentials are retained for only six years, unless the file is updated.

The Family Educational Rights and Privacy Act of 1974 provides that the release of placement credentials or information in the file must be authorized in writing by the registrant unless the information is a matter of public record, and that under certain conditions each student may have the right to review his/her placement file (data sheet and evaluations) and to obtain a copy of it for a fee.

All employers and schools interviewing on campus or listing openings with the Placement Office must indicate that they are equal opportunity employers, that is, that in hiring, compensation, promotion, training or admission they do not discriminate on the basis of race, color, religion, sex, age, national origin or handicap.

# Outreach—The University and the Community

The University touches the lives of area citizens through the involvement of its faculty and staff in many facets of community life: business, education, social services, cultural activities, historic preservation, science, literary endeavors and others. Recognizing that its mission extends beyond the campus classroom, The University sponsors a range of services and programs that benefit the community. The Division of Development and Public Service was created especially to coordinate these outreach programs. The Division also fosters community support to ensure UNCC's standards of excellence and provide programs, research opportunities, and avenues for scholarly pursuits.

**The Office of Academic Grants and Contracts** has been established to inform and assist the University community in seeking grants, contracts and service agreements for funding research, training and other scholarly activities. The staff is available to consult with faculty and to assist in pre-award activities such as identification of sources, interpretation of guidelines, preparation of budgets and compliance with regulations. The Office also maintains a resource area consisting of grant guidelines, reference books and proposal preparation aids and provides limited word processing services to proposal writers.

**The Office of Alumni Affairs** is housed in the Reese Building, and the Director of Alumni Affairs acts as the liaison officer between the graduates and The University. The graduate should notify the Alumni Office of address changes and significant events in his or her life, such as marriage, births, new positions and honors. In this way, adequate records can be maintained, and the Alumni Office can pass good news along to friends of the alumnus.

*The General Alumni Association* of The University of North Carolina at Charlotte is the recognized official alumni organization. Graduates of The University are encouraged to provide updated address and employment information so that The University may maintain lifelong contacts with each individual. Persons attending The University for one semester are eligible for membership in the General Alumni Association.

Membership can help the student maintain friendships of college days and obtain useful information from The University about programs and social activities. The General Alumni Association executes annual telefunds as part of the annual giving program and contributes to worthy projects for UNCC. Thus, the alumnus can support Alma Mater in a useful and efficient way. A quarterly newspaper is provided to alumni, and group tours to vacation spots within the United States and abroad are organized.

The Alumni Association co-sponsors with UNCC the Commencement Reception for the new graduates, parents, faculty and friends. Class reunions are held to honor the anniversary of various classes of graduates. The Homecoming activities highlight the events of the fiscal year for alumni.

Regional chapters have been established in counties throughout the state to increase the involvement and interest of alumni throughout the state.

*The Chancellor's Club* provides alumni an opportunity to support academic excellence in higher education by establishing an endowment fund for the Alumni Scholarships for Merit program. The Alumni Scholarships for Merit are awarded annually to two students for outstanding academic performance while attending The University.

*The Parents Association of UNCC* exists to involve all parents of UNCC students in University activities. Through regular communication and campus activities, parents achieve a close rapport with The University. The Association supports UNCC through financial means, good will and recruitment of students.

**The Office of Development,** located in the Reese Building, is responsible for coordination of University efforts to secure financial support from the private sector and to serve as the receiving point for gifts of dollars, securities, works of art, land and equipment.

Through the Foundation of The University of North Carolina at Charlotte, the General Alumni Association, Friends of UNCC, the Athletic Foundation and advisory boards, the various avenues of supporting The University are made known to individuals, corporations and foundations.

To achieve a superior standing, UNCC relies upon the private sector for funds not available through state appropriations. Contributors are encouraged to take advantage of the various and most favorable means of supporting The University. Included among these are cash gifts, charitable remainder trusts, annuity trusts, unitrusts, pooled life income funds, wills and bequests, insurance and matching gift programs.

Additional information is available in the Office of the Vice Chancellor for Development and Public Service, UNCC, Charlotte, NC 28223; telephone 704/547-2271.

**The Foundation of The University of North Carolina at Charlotte** was founded in 1960 and has had from its inception the goal of undergirding The University and assisting it in the quest for excellence. To accomplish its goals, the Foundation invites private sources to contribute so that needs unmet, or inadequately provided for through state funds, may be met.

Through the 1985-86 academic year, the Directors of the UNCC Foundation have allocated more than $3 million to The University for salary supplements, faculty research, scholarships and special projects.

*Patrons of Excellence* is a program established by the Foundation of The University of North Carolina at Charlotte, with the primary initial objective of supplementing the salaries of distinguished faculty members. Under the program, Patrons pledge a minimum of $1,000 a year for a number of ten years or may make a donation of at least $10,000 at one time. Patrons of Excellence now number 291. The Foundation continues to seek additional Patrons.

**The Public Information and Publications Office,** located in the Reese Building, is the official communications channel through which The University disseminates information to its various publics. The Office has three major functions: (1) external media relations, (2) internal communications and (3) official University publications which are distributed to off-campus audiences. The Office, as the official channel for distribution of news and information to the mass media, distributes news and features stories about University programs and its people as well as hometown releases about achievements of students. A weekly newsletter called *Campus News* keeps faculty and staff informed about campus activities; items are accepted from employees on a space-available basis for distribution in the newsletter. In addition, the Office provides assistance in printing official publications for University departments. This includes assistance with writing or rewriting copy, writing printing specifications, obtaining design and layout services and seeking printers (on- and off-campus) according to state-required purchasing guidelines.

**The University Forum** provides a campus platform for outstanding national figures to examine key issues in depth. The University Forum Council, composed of representatives from the student body, faculty, administration and the community, sponsors the Forum each year. Usually held during the spring, the Forum was initiated in 1966.

**The Urban Institute** provides direction for the University's urban focus by initiating and supporting urban-related research, institutes, seminars, publications and special community projects. Institute activities are designed to increase productive interaction between The University and community. Projects are initiated by members of the faculty, community clients or the Institute staff and focus on a broad spectrum of urban topics, e.g., local government, waste management, land use, small business assistance and economic development. Students may become involved in Institute projects as part-time research assistants or interviewers, or they may become involved with the Institute in conjunction with course work or degree requirements by writing term papers, graduate theses, or completing internships.

Institute activities fall into several program areas. All are affected by the Institute's active involvement in seeking grants and contracts.

*The Development and Public Information Program* assists in the development of applied research and public service projects and awards seed grants to faculty to develop proposals for submission to external funding agencies. The program sponsors, on an *ad hoc* and continuing basis, educational and informational programs, and researches, designs and publishes urban newsletters, atlases and books.

*The Community Research Service Program* responds to community needs and assists community clients in several ways. One focus is a Survey Service which conducts an annual survey of city and county residents and designs and implements surveys and needs assessments for a variety of community clients. In addition, the program responds to community needs, particularly the needs of local government, by providing consulting and technical assistance on a contractual basis.

Community programs such as the Charlotte-Mecklenburg Citizens Forum and Leadership Charlotte are administered by the program. The director is dually appointed with the Department of Political Science.

*The Regional Information System* is a computerized data bank containing data on Charlotte-Mecklenburg, North Carolina, the South and the nation. Files are available on a wide variety of topics including population, housing, income, real estate value, and land use. System data can be accessed in graphic and tabular form and are available to faculty for research and educational purposes. The program coordinates the University's participation in the Inter-University Consortium for Political and Social Research, described as "the world's largest social science data base." The director is dually appointed with the Department of Geography and Earth Sciences.

*The Southeast Waste Exchange* specializes in the development of safe and economical waste prevention and management strategies by providing research and consulting services to industries, government agencies and the general public throughout the Southeast. It publishes a quarterly bulletin, the *Waste Watcher,* which lists materials and services "available" or "wanted" by companies, conducts industry-specific workshops and conferences and conducts waste management and environmental research jointly with other University departments.

*The University/Industry Cooperative Programs* area initiates and develops cooperative projects between The University and the private sector by acting as a catalyst and a broker in developing programs in close cooperation with other University units. At an off-campus site, the program operates a Small Business and Technology Development Center which provides assistance to new and expanding businesses. At the same site the program is developing a non-profit University Business Incubator Center.

*The Economic Development and Planning* area conducts special research and planning projects focusing on economic development. Research and data analysis for economic development publications, survey research, and land use studies are typical activities.

*The Institute for Transportation Research and Education* focuses on transportation research, education and information dissemination. The program specializes in the development of computerized routing for government agencies.

**WFAE-FM 91** is Charlotte's only National Public Radio affiliate, on the air 24 hours a day, 365 days a year. Its 100,000-watt stereo signal reaches listeners in 22 North and South Carolina counties with a program schedule consisting of classical music, news, jazz and folk music. Offices and studio facilities are located at University Place. Student interns and volunteers from the community supplement the work of nine full-time professional staff members in areas of operations, production and promotion. In addition, faculty, staff and students contribute to WFAE's ongoing local programming efforts. One of WFAE's own productions, a weekly Celtic music series called "The Thistle & Shamrock," has been syndicated nationally since June of 1983, bringing nationwide acclaim to WFAE, to UNCC and to Charlotte. For more information about the station, call AC 704/549-WFAE for a complimentary issue of WFAE's monthly radio guide, or write to WFAE, 1 University Place, Suite 91, Charlotte, NC 28213.

# Benefactions

### FIRST CITIZENS BANK SCHOLARS MEDALS

In order to foster the advancement and diffusion of knowledge and creative endeavors, the Graduate School presents each year a limited number of Scholars Medals for excellence in creative activities and research. Full-time faculty members of The University are eligible. Nominations are based on the excellence and importance of contributions in research and creative activities, for example, a scientific discovery, a book, a series of related articles, a novel, sculpture, or paintings. The awards, which take the form of a cash prize and a medal, are sponsored by First Citizens Bank.

### NCNB AWARDS FOR TEACHING EXCELLENCE

The generosity of NCNB has made possible the NCNB Awards established for the purpose of recognizing and honoring members of the faculty for distinguished service. The NCNB Awards initially are used to reward excellence in teaching by members of the faculty or to honor faculty members for distinguished research and scholarly writing or devoted and sacrificial service to The University and to humankind.

## PROFESSORSHIPS

*The BarclaysAmerican Corporation Professorships in Business Administration* were established by the American Credit Foundation of North Carolina, Inc. The Foundation approved a statement of intent in January, 1967 to contribute $100,000 to be paid over a period of ten years and to be used for the presentation of a salary supplement or supplements to a distinguished member or members of the faculty of the College of Business Administration, who will be known as BarclaysAmerican Corporation Professors of Business Administration.

*The Robert Lee Bailey Professorship in History* was UNCC's first professorship, established in December, 1965 by Mr. and Mrs. Sanford V. Davenport to honor and reward excellence in teaching by a gift in memory of her brother, Lieutenant Robert Lee Bailey of the 10th Armored Division of the U.S. Army, who was killed in Germany on March 22, 1945, near the end of the conflict in Europe. Born on April 21, 1914, in Concord, he attended Davidson College and before the war was associated with Broyhill Furniture Company.

*The Celanese Professor of Engineering* is a distinguished professorship in the College of Engineering, which has its salary supplemented by part of the income from the rental of a building donated by the Celanese Corporation and valued at more than $1 million.

*The Charles E. Cullen Professorship* was established in 1973 by the Charlotte Sales and Marketing Executives, Inc. to honor the late "Charlie" Cullen of Charlotte. The professorship consists of an endowment in the amount of $100,000 by Charlotte Sales and Marketing Executives, Inc. The income from the endowment is to provide a salary supplement or supplements for a distinguished professor of marketing in the College of Business Administration.

*The Rush S. Dickson Professorships in Finance* were established in memory of the late Rush S. Dickson of Charlotte. The professorships are made possible through the generous gifts and pledges, totaling $100,000, by the Dickson Foundation of Mount Holly and the Rush S. Dickson Family Foundation of Charlotte. Mr. Dickson established both foundations. The net income from the gifts is used for the payment of a salary supplement or supplements to a distinguished member or members of the faculty of the College of Business Administration in the field of finance.

*The Frank Porter Graham Professorship in Black Studies* was established by Miss Alice Lindsay Tate in honor of the former president of The University of North Carolina, United States senator and United Nations mediator. The income from the professorship fund will be used as a salary supplement for a distinguished member or members of the faculty of The University of North Carolina at Charlotte.

*The Artie Sue Kerley Professorship in Nursing* was established in 1972 by Miss Artie Sue Kerley to provide a salary supplement for a distinguished member of the College of Nursing faculty.

*The Charles H. Stone Fund* was given by Mrs. Clara Stone in memory of her husband, a pioneer in the chemical and dyestuff industry in the South. The grant is dedicated to perpetuating the memory of Mr. Stone and assuring the high quality of chemistry instruction at The University of North Carolina at Charlotte. The net income is used for the payment of a salary supplement to a distinguished member or members of the chemistry faculty, who are designated as Charles H. Stone Professors of Chemistry. Before World War I, Mr. Stone was employed by a German chemical company, and later he formed his own company in Charlotte and operated it until 1937 when it was purchased by American Cyanamid Company. Mr. Stone remained active with the company until his retirement in 1947. He died October 30, 1963. Upon the death of Clara Stone in January of 1986, it was announced that her bequest to The University will provide additional support for the professorship in chemistry and will also allocate funds to enhance Library collections and establish the Charles H. Stone Professors of American History.

## SCHOLARSHIPS

UNCC offers a comprehensive undergraduate scholarship program made possible by gifts from individuals, corporations and foundations. Major scholarships include:

Alumni Scholarships for Merit
C.C. Cameron Scholars Program
Colvard Scholarships for Merit
Bonnie E. Cone Scholarships for Merit
Cameron Morrison Scholarships

For a description of these scholarships and a listing of others, see pages 60-61 of this *Catalog* in the section on "Financial Aid."

# Student Life

# Student Life

## ACTIVITIES

Students at The University of North Carolina at Charlotte are encouraged to participate in extracurricular activities. Student Body Government, University Program Board, campus publications, and WFAE (the radio station) are only a few of the activities available which can play a significant role in each student's development and total education. Participation in activities, ranging in type from service and religious to athletic and social, and from creative arts and crafts to wilderness experiences, increases a student's opportunities to acquire leadership skills, to experience the responsibilities involved in functioning within a self-governmental process, and to develop personal talents and interests.

Students are in good standing and eligible for participation in student activities as long as they are academically eligible to continue their enrollment.

**Athletics** at The University of North Carolina at Charlotte offers the interested student-athlete a choice of 13 intercollegiate sports for men and women in which to compete on the varsity level.

Male athletes compete in seven sports during the academic year — soccer and cross country in the fall; basketball and swimming in the winter (during fall and spring semesters); and tennis, baseball (also with a fall schedule) and golf (also with a fall schedule) in the spring.

The 49er men's program competes under the national governing powers of the National Collegiate Athletic Association (NCAA), of which it is a member of Division I, the highest competitive level (large colleges and universities), in all seven sports.

UNCC is also a charter member of the Sun Belt Conference, which was formed in 1976 and includes Jacksonville; South Florida; South Alabama; Alabama at Birmingham; Virginia Commonwealth; Old Dominion; and Western Kentucky. Championship meets and tournaments are conducted in six sports within the SBC, from which winners may advance to the NCAA's national championship.

A round-robin home and away SBC schedule is played in basketball, the sport that receives the major emphasis at UNCC. SBC baseball is divided into East and West divisions, with round-robin home and away doubleheaders within each division determining the two teams from each division who earn the right to compete in the annual four-team SBC Tournament in early May. UNCC soccer is also developing into a sport of national stature. The 49ers consistently play many nationally ranked soccer teams and have themselves earned rankings in the South, winning the 1983 Sun Belt championship.

The UNCC women's intercollegiate athletic program consists of six sports, including volleyball, basketball, swimming, softball, cross country and tennis. The women's program also falls under the national governing jurisdiction of the NCAA, a move which came about during the 1982-83 academic year. Since 1983 the women have competed in Sun Belt Championships in volleyball, basketball, tennis and cross country.

The 49er women compete at the Division I level of the NCAA and are participating at the highest competitive level in the nation. Scholarships for deserving female athletes are available in all six women's sports, with basketball receiving the emphasis in terms of funds allocated.

The men's basketball team plays home games in the 11,666-seat Charlotte Coliseum or the Mine Shaft gymnasium on campus; the baseball, soccer and softball teams play on campus playing facilities; and the golf team competes at Pawtuckett Country Club. The remaining four men's teams play on campus. The UNCC women play home basketball games in the Charlotte Coliseum and the Mine Shaft gymnasium; home volleyball matches and swim meets are held in the Mine Shaft; and both tennis teams compete on campus facilities.

Coaches and trainers are listed in the Directory of this *Catalog*.

**Intramural sports** are offered in a comprehensive program to provide enjoyable recreational opportunities for the student body. The program includes team, dual and individual sports for both men and women, corecreational activities and ample opportunities for unstructured "free play" activities. The gymnasium is open for student use throughout the week, at night and on weekends.

Designed primarily for the participant, the gymnasium features six indoor basketball courts, an Olympic-size swimming pool, handball and squash courts, weight and wrestling rooms, a

well-equipped training room and lockers for 6,000 students and faculty. It will seat 3,200 spectators for basketball and other intercollegiate activities. In addition, the gym houses classrooms and an auditorium for audiovisual presentations.

**The Student Body Government** provides students an early experience in governmental affairs. Students often find their work in student government a useful background for later public service. The history of student government is as old as the institution itself. The University encourages student participation in its affairs and has student representatives on many of the faculty and administrative committees. The leaders of student government are committed to representing the student body and to developing students' awareness of the many facets of life at their University. All students who are regularly enrolled at UNCC, whether on a part- or full-time basis, are entitled to participate in student government.

At UNCC, Student Body Government comprises:

*The Executive Branch,* made up of the president, his/her cabinet, various appointees such as the attorney general and student legal counsel as well as a number of committees appointed by the president.

*The Student Legislature,* composed of the chairperson, the four class presidents, the residence hall representatives, commuter student representatives, representatives from each college chosen by the students majoring in the several colleges of The University, and graduate student representatives. The chair of the Student Legislature conducts all meetings and serves as liaison between the Legislature and the president's office. The student body treasurer reports to the Student Legislature.

*The Student Judiciary,* composed of the justices of the Student Court, attorney general, and the student legal counsel, is responsible for dealing with cases of alleged violations of the UNCC Code of Student Responsibility and for interpreting the Student Body Constitution.

**The Student Leadership Development Program** was implemented with the belief that leadership skills can be developed and that UNCC students deserve the best program available to nurture them in the acquisition of these skills. This program provides individuals with opportunities to develop skills and abilities at their own level, and it also provides The University and student organizations with potentially more effective and efficient leaders.

The goal is to provide a comprehensive and diverse program of leadership development activities for student leaders and potential leaders.

The program consists of five major components. Each component is designed for a target group of campus leaders, members of their organizations or potential leaders of campus organizations. A variety of training methods and formats are available for student leaders. The components of the Leadership Program are:

(1) The Motivators Program—For established leaders
(2) The President's Club—For club and organization officers
(3) Emerging Leaders Program—For freshmen and sophomores
(4) Developing Leadership Potential—A three-credit course in the Department of Human Services.
(5) Individual and Group Consultation

Contact the Dean of Students Office for more information– 547-2375.

**The Student Media Board** is comprised of student, faculty and administrative staff members, as well as representatives of the various student media. Its purposes are to promote the objectives of each publication and to guarantee editorial freedom to the publications within the framework of responsible journalism. The individual media under the Media Board are as follows:

*Sanskrit* is the literary arts magazine published by students interested in the arts. Original work in writing, drawing, photography and other arts is welcomed by the editor. Students are invited to become members of the magazine staff.

*The 49er Times* is the student newspaper, which covers campus news and provides journalistic experience. Experience on a campus newspaper, together with a broad educational base, often provides the background for a career on a newspaper or a magazine. The campus newspaper provides a vital service to the entire University community by keeping its members informed of issues of common concern and interest.

*The ETC. Magazine* is another publication which provides both a service to The University and an opportunity for student journalists to gain essential skills for late careers. The magazine is designed to provide a valid picture of the spirit of campus life. It is valued as a pictorial record and as an opportunity for creative student journalists to produce a book which is aesthetically pleasing and representative of a student experience at UNCC. The magazine is published at the beginning of each semester.

**The University Program Board** is a student-operated organization that plans and promotes social, cultural, educational and recreational programs for students and the University community. These programs include concerts, coffeehouse entertainment, homecoming, lecture/fine arts programs, films, minority programs and other special activities.

The Program Board consists of a chairperson, vice chairperson, secretary, treasurer, and six committee directors and four at-large members. The chairperson and vice chairperson are elected in the annual campus-wide spring elections. Directors and members at large are selected by an application and interview process during spring semester. Any member of the University community is welcome to join one of the six committees.

## STUDENT ORGANIZATIONS

The University has many clubs and organizations which help meet the academic, social, political and religious needs of UNCC students. Following is a list of the clubs and organizations which are chartered for the 1986-87 academic year through the Student Government Association. Students interested in any of these organizations should contact the Student Government Office (547-4606) or the Dean of Students Office (547-2375).

Allied Health Club
American Institute of Architects—
Associated Student Chapter
American Marketing Association-Collegiate Chapter
American Society of Civil Engineers
American Society of Mechanical Engineers
American Society of Personnel Administrators
Arnold Air Society
ASHRAE*
Association of Biology Graduate Students
Association for Computing Machinery
Association of Nursing Students
Baha'i Club
Baptist Student Union
Black Student Union
Campus Crusade for Christ
Chem Club
Children of the Sun
Chinese Student Union
Chi-Rho Catholic Student Union
Christian Science Organization
College of Architecture-Student Council
College Democrats
College Republicans
Commuter Association
Commuter Information Assistance
Cooperative Campus Ministry
Dance Ensemble
Debate Team
Dungeons and Dragons
Geology Club
German Club
Graduate Student Association
Greek Row Undergraduate Board
Indian Student Association
Institute of Electrical & Electronics Engineers
Institute of Internal Auditors
Institute of Transportation Engineers
International Club
International Studies
Inter-Varsity Christian Fellowship
Intrafraternity Council
Karate Club
Latter Day Saints Student Association
Mean Green Music Machine
Model United Nations Club
Muslim Student Association
National Art Education Association
National Association of Black Accountants
North Carolina Student Legislature
Panhellenic Council
PEACE
Pi Sigma Epsilon
Political Science Club
Pre-Law Society
Professional Engineers of North Carolina
Safe Drive
Society of Physics Students
Society of Women Engineers
Student Alumni Association
Student Life Fellowship
Student N.C. Association of Educators
University Badminton Club
Vietnamese Student Association
Way Campus Outreach

*Greek Organizations*
Alpha Delta Pi Sorority
Alpha Kappa Alpha Sorority
Alpha Kappa Psi Fraternity (Business)
Alpha Phi Alpha Fraternity
Alpha Phi Omega Fraternity
(National Service Fraternity; open to men and women)
Alpha Sigma Phi Fraternity
Chi Omega
Chi Phi Fraternity
Delta Pi Omega
Delta Sigma Theta Sorority
Delta Zeta Sorority
Kappa Alpha Fraternity
Kappa Alpha Psi Fraternity
Kappa Sigma Fraternity
Lambda Chi Alpha Fraternity
Omega Psi Phi Fraternity
Omicron Delta Kappa
Pi Kappa Phi Fraternity
Sigma Phi Epsilon Fraternity
Tau Beta Pi
Seta Tau Alpha Sorority

*American Society of Heating, Refrigeration and Air Conditioning Engineers

## HONORARIES

*Alpha Kappa Delta* is a national sociology honor society established for the purpose of promoting interest in sociology, research on social problems, and enhancement of human welfare. The Eta of North Carolina Chapter was organized at UNCC in 1974. Its members are selected from those students who have demonstrated superior academic achievement both in their sociology major and their total academic program.

*Alpha Phi Sigma* is affiliated with the Academy of Criminal Justice Sciences. It was organized on campus in 1975. The Society recognizes scholastic excellence by undergraduate and graduate students in the criminal justice sciences. All students must have completed one-third of the credit hours required for graduation by a college or university accredited by the appropriate regional accreditation organization. They also must be recommended by a local chapter adviser or faculty member. Undergraduates must maintain a 3.0 cumulative GPA and a 3.2 GPA in Criminal Justice while graduate students are required to have a 3.4 GPA in all graduate courses. Students must rank in the top 35 percent of their class. In addition, applicants must have completed at least four courses in a Criminal Justice major, minor, or equivalent.

*Beta Alpha Psi* is a scholastic and professional society composed of persons of moral character who have achieved academic excellence in the field of accounting. Its purpose is three-fold: (1) to encourage and recognize scholastic and professional excellence; (2) to cultivate a sense of ethical, social, and public responsibilities and service; and (3) to provide opportunities for association among its members and practicing accountants. Membership includes students, faculty, alumni and honorary members. Details on membership will be provided to all accounting students during their junior year.

*Beta Gamma Sigma,* the national honor society in business and management, was established in 1913 to (a) encourage and reward scholarship, (b) promote advancement of education in business, and (c) foster integrity in the conduct of business operations. Membership in Beta Gamma Sigma is the highest national recognition a student in the College of Business Administration can receive. To be eligible for membership, a student must rank in the upper 5 percent of the junior class, upper 10 percent of the senior class, or upper 20 percent of the master's class. Invitations are sent to qualified students during the spring semester.

*Gamma Theta Upsilon* is an international geography honor society. Its purposes are to: (1) further professional interest in geography by affording a common organization for those interested in the field; (2) strengthen student and professional training by the exploration of subjects other than those of the classroom and laboratory; (3) advance the professional status of geography as a cultural and practical subject for study and investigation; (4) encourage student reseearch of high quality and to provide an outlet for publication; and (5) make funds available to students for graduate study and/or research in the field of geography. There are three membership categories: regular, associate, and honorary. To become a *regular* member the initiate must have completed a minimum of three geography courses with a *B* average, must rank in the upper 35 percent of his or her class, and must have completed at least three semesters of college courses. An *associate* initiate must have completed at least two courses in geography with a minimum grade of *B,* have completed at least one full-time semester of college work, and not be on, or about to be put upon, probation. *Honorary* membership is extended by the chapter to individuals it feels have contributed to marked advancement of any phase of geography by exploration, research, lecturing, publishing, or in any other way. Activities include lectures, university service, and socials.

*Omicron Delta Kappa* is a national leadership honorary and was created for the purpose of recognizing outstanding leadership and achievements among students who have made significant contributions to the development of the University community. Students are selected each year by a committee of students, faculty and staff. Selection is primarily based on a point system which considers academics, leadership, service and activities. The student receiving the highest number of points is given the Cindy Holmes Award in memory of the late Cindy Holmes whose unselfish contributions to The University represent the highest ideals of the Society.

*Phi Alpha Theta,* which has chapters in the United States, Canada and the Philippines, has as its purpose to encourage the study of history and to acknowledge academic achievement in history. To be eligible for membership, undergraduates must have completed at least 12 semester hours in history with a grade average in all history courses of better than 3.0 and an overall grade average of at least 3.0 in two-thirds of their other courses and must rank in the upper 35 percent of their class. Graduate students who recently received their undergraduate degrees may apply on the basis of their undergraduate records. Graduate students who are not recent graduates must have completed at least one-third of the requirements for the master's degree (at least ten credits in history) and have a straight *B* average or better.

*Phi Kappa Phi,* a national honor society with chapters in 49 states, the Philippines and Puerto Rico, has the primary objective of recognizing and encouraging superior scholarship in all academic disciplines. To be eligible for election to membership, a student must have attended UNCC for at least one year and rank scholastically in the upper 5 percent of the junior class, the upper 10 percent of the senior class, or the upper 10 percent of the graduate enrollment. Graduate students also must have an outstanding undergraduate record. Faculty members and alumni who have achieved scholarly distinction may, in limited numbers, be elected to membership. The number of undergraduates elected to membership within an academic year cannot exceed 10 percent of the number of candidates for baccalaureate degrees that year; and the number of graduate students elected to membership in an academic year cannot exceed 10 percent of the graduate enrollment at the time of the election.

*Pi Alpha Alpha* is the national honorary society of the field of public affairs and public administration. Its purpose is to encourage and recognize outstanding scholarship and accomplishment in educational programs leading to public service careers. Membership is open to UNCC graduate students in the Master of Public Administration program who have achieved academic distinction. Initiation into the society is recognized at an annual banquet near the end of the academic year.

*Pi Mu Epsilon* is a national honorary society established to promote interest in mathematics. Invitations are based on superior academic achievement both in mathematics and in the general program. Activities include lectures, films and a late spring social meeting.

*Pi Sigma Alpha* is a national honor society which promotes the study of politics and recognizes the achievements of superior students in the discipline of political science. Invitations for membership are issued to all political science majors who are juniors or seniors and have a grade point average of at least 3.2 overall and in political science courses. Its activities include a formal initiation banquet near the end of each academic year, featuring a talk by an established scholar in the discipline.

*Sigma Gamma Epsilon,* the national honorary society for the earth sciences, was established in 1915 to recognize scholarship and professionalism in the earth sciences. The Society has as its objectives: the scholastic and scientific advancement of its members; and the extension of relations of friendship and assistance among colleges and universities which are devoted to the advancement of the earth sciences. The Epsilon Sigma chapter was established at UNCC in 1985. Chapter members are chosen from nominees who have completed a minimum of 12 semester hours of earth science courses, have maintained a minimum of 3.0 GPA in all earth science courses, with an overall GPA of at least 2.67 in all college courses. Members receive a subscription to *The Compass,* a professional journal.

*Sigma Pi Sigma,* the only physics honor society, was founded as a local honor organization at Davidson College, North Carolina, on December 11, 1921. The society, now national in scope with 350 active chapters, has a total membership of more than 50,000 with 2,500 active members and the rest alumni members. Sigma Pi Sigma chapters are restricted to colleges and universities of recognized standing which offer a strong physics major. The chapters receive into membership those graduate and undergraduate students who have a GPA of at least 3.0 overall and at least 3.0 in the physics major, as well as faculty members and a few others in closely related fields. Undergraduate candidates must have completed at least three semesters of full-time college work and at least one upper-division physics course in order to be considered for membership in the Society. Sigma Pi Sigma became a member of the Association of College Honor Societies in 1945 and has been affiliated with the American Institute of Physics since 1951.

*Sigma Tau Delta* is the national English honor society established to confer distinction on English majors and to foster an interest in literature, language and writing. Students who maintain a 3.0 grade point average and rank in the top 35 percent of their class are eligible for membership. The top candidates from those eligible are invited to join the Beta Sigma chapter of the honorary.

*Sigma Theta Tau,* the honor society of the College of Nursing, was established for the purpose of recognizing superior knowledge, recognizing the development of leadership qualities, fostering high professional standards, encouraging creative work and strengthening commitment to the ideals and purposes of the nursing profession. Candidates for the honor society are selected from baccalaureate and master's students. Eligible baccalaureate students must have completed at least one-half of the required nursing curriculum with a cumulative grade point average of 3.0 or better. Master's students must have completed at least one-fourth of the required curriculum, including a clinical

course, and have a grade point average significantly higher than the minimum requirement for graduation. Graduate nurses with a baccalaureate or higher degree who have demonstrated marked achievement in the field of nursing are also eligible for membership.

*Tau Alpha Pi* is a national honor society which recognizes the scholastic performance of engineering technology students. Students must nominate themselves and have at least a 3.5 grade point average. Since all of the engineering technology students enter the program as juniors, this grade point average must be established after one semester at UNCC or, as a part-time student, after 24 credit hours.

*Tau Beta Pi,* the national engineering honor society, has approximately 200 collegiate chapters and 55 alumnus chapters. The purpose of Tau Beta Pi is to recognize engineering students of superior scholarship and exemplary character and professionals in engineering with eminent achievement. Students in the upper eighth of their junior engineering class or in the upper fifth of their senior engineering class are eligible for consideration for membership in Tau Beta Pi. Students must also exhibit exemplary character in order to be elected to membership by the members of the chapter. In addition to recognizing scholarship and character, Tau Beta Pi chapters conduct programs to benefit their membership, university and community. UNCC's chapter, the North Carolina Delta chapter, was installed in March 1979. Over 300 members have been initiated into the chapter since then.

## HONORS AND AWARDS

A number of individual student honors and awards for academic achievement, leadership and service are given annually through the various colleges and on a University-wide basis. Among the academic honors are the Chancellor's List, the Dean's List, commencement marshals and graduation with distinction of summa cum laude, magna cum laude or cum laude. (See the chapter on Academic Regulations and Degree Requirements for more information.) An annual Honors and Awards Program is held in the spring prior to graduation.

## OFFICE OF RELIGIOUS AFFAIRS

As a tax-supported public institution, The University of North Carolina at Charlotte neither promotes nor recommends any religious orientation. However, The University recognizes that spiritual discernment and moral appreciation are essential to the development of the whole personality and therefore has established an Office of Religious Affairs headed by a coordinator.

The functions of this office include providing information to the campus community and general public about religious activities and programming as well as coordinating the activities of religious organizations in The University. A large number of such organizations at UNCC provide a variety of services including prayer, pastoral and academic counseling, retreats, Bible study, marriage preparation, discussion groups, ecumenical activities and social services. Faculty members and students may obtain additional information by contacting the Office of the Dean of Students or the Office of Religious Affairs.

The religious denominations listed below provide the full-time services of their representatives to serve the spiritual needs of students and other members of the campus community.

Don Rogers, Baptist
Barbara Domby, Catholic
Leslie Sladky, Presbyterian/United Methodist

These persons and other denominational representatives may be reached through the Office of Religious Affairs, 200 King Building, 547-2344.

# University Regulation of Student Conduct

As students willingly accept the benefits of membership in the UNCC academic community, they acquire obligations to observe and uphold the principles and standards that define the terms of UNCC community cooperation and make those benefits possible.

The University of North Carolina at Charlotte has enacted two codes governing student conduct. All UNCC students are obligated to be familiar with each code and to conduct themselves in accordance with the standards set forth.

**THE UNCC CODE OF STUDENT ACADEMIC INTEGRITY** governs the responsibility of students to maintain integrity in academic work, defines violations of the standards, describes procedures for handling alleged violations of the standards, and lists applicable penalties. The following conduct is prohibited in that *Code* as violating those standards:

A. •**Cheating.** Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices in any academic exercise. This definition includes unauthorized communication of information during an academic exercise.

B. •**Fabrication and Falsification.** Intentional and unauthorized alteration or invention of any information or citation in an academic exercise. Falsification is a matter of altering information, while fabrication is a matter of inventing or counterfeiting information for use in any academic exercise.

C. •**Multiple Submission.** The submission of substantial portions of the same academic work (including oral reports) for credit more than once without authorization.

D. •**Plagiarism.** Intentionally or knowingly presenting the work of another as one's own (i.e., without proper acknowledgement of the source). The sole exception to the requirement of acknowledging sources is when the ideas, information, etc. are common knowledge.

E. •**Abuse of Academic Materials.** Intentionally or knowingly destroying, stealing, or making inaccessible library or other academic resource material.

F. •**Complicity in Academic Dishonesty.** Intentionally or knowingly helping or attempting to help another to commit an act of academic dishonesty.

**A full explanation of these definitions, and a description of procedures used in cases where student violations are alleged, is found in the complete text of The UNCC Code of Student Academic Integrity. This Code may be modified from time to time. Users are advised to contact the Office of the Dean of Students to assure they consult the most recent edition.**

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**THE UNCC CODE OF STUDENT RESPONSIBILITY** sets forth standards relating to student conduct other than academic conduct, describes the procedures for handing cases, and sets forth applicable penalties. The following conduct is prohibited and subjects a student to disciplinary action:

A. Intentionally or recklessly causing physical harm to any person on University premises or at University-sponsored activities, or intentionally or recklessly causing reasonable apprehension of such harm; intentionally or recklessly subjecting another person to a substantial risk of physical injury or serious emotional harm.

B. Unauthorized use, possession or storage of any weapon on University premises or at University-sponsored activities.

C. Intentionally initiating or causing to be initiated any false report, warning or threat of fire, explosion, or other emergency on University premises or at University-sponsored activities.

D. Intentionally or recklessly interfering with normal University or University-sponsored activities, including, but not limited to, studying, teaching, research, University administration, or fire, police or emergency services. Students are advised that a separate policy (UNCC Policy Statement #58, "Interference with University Operations," approved by the UNCC Board of Trustees in 1981), prohibits student action taken "with the intent to obstruct or disrupt any normal operation or function of the University." Students charged with violation of that policy may be subject to disciplinary action, in the Chancellor's sole discretion, in accord with the procedures described herein, or in accord with procedures applicable to the Chancellor's Hearing Panel. The full text of the Policy Statement is available for inspection in the Office of the Dean of Students.

E. Knowingly violating the terms of any disciplinary sanction imposed in accordance with this Code.

F. Unauthorized distribution or possession for purposes of distribution of any controlled substance or illegal drug on University premises or at University-sponsored activities.

G. Intentionally or recklessly misusing or damaging fire safety equipment or elevators.

H. Intentionally furnishing false information to The University.

I. Forgery, unauthorized alteration, or unauthorized use of any University document or instrument of identification.

J. Intentionally and substantially interfering with the freedom of expression of others on University premises or at University-sponsored activities.

K. Theft of property or of services on University premises or at University-sponsored activities; knowing possession of stolen property on University premises or at University-sponsored activities.

L. Intentionally or recklessly destroying or damaging the property of others on University premises or at University-sponsored activities.

M. Failure to comply with the directions of University officials, including campus police officers, acting in performance of their duties.

N. Violation of published University regulations or policies, as approved by the Vice Chancellor for Student Affairs. Such regulations or policies may include the residence hall contract, as well as those regulations prohibiting sexual harassment by students, regulations relating to entry and use of University facilities, use of vehicles and amplifying equipment, campus demonstrations, and misuse of identification cards.

O. Possessing, consuming, or distributing alcoholic beverages without authorization on University premises or at University-sponsored activities, including but not limited to possession or consumption of alcoholic beverages on campus or at University-sponsored activities by students below the legal minimum age; display or consumption of liquor, fortified wine, or mixed beverages by students less than 21 years of age in their campus residences; giving, furnishing, or selling any alcoholic beverage on campus or at any University-sponsored activity to any person not of sufficient legal age to possess or consume such alcoholic beverage; failing to abide by the provisions of an alcoholic beverage approval form; and any sale of any alcoholic beverage on the University campus. (The full text of University Policy Statement #57, "Use and Consumption of Alcoholic Beverages," is available for inspection in the Office of the Dean of Students.)

P. Use or possession of any controlled substance or illegal drug on University premises or at University-sponsored activities.

Q. Unauthorized presence in or use of University premises, facilities, or property.

R. Unauthorized use or possession of fireworks on University premises.

S. Engaging in disorderly conduct such as fighting, threatening behavior, public disturbance, or drunk and disorderly conduct.

**All UNCC students are obligated to be familiar with The University of North Carolina at Charlotte Code of Student Academic Integrity and Code of Student Responsibility.**

**Copies of these documents have been distributed to students. Any student who needs a copy of either document may obtain one at the Office of the Dean of Students.**

**The University reserves the right to amend the codes from time to time. Notice of amendments will be publicized.**

# Admission To The University

# Programs and Degrees Offered

| Subject Area | Degree(s) | Minor | Teacher Certification | Other |
|---|---|---|---|---|
| Accounting | BS | | | |
| Afro-American and African Studies | BA | | | |
| Air Force Aerospace Studies (AFROTC) | | | | |
| American Studies | | • | | Emphasis |
| Anthropology | BA | • | See Social Studies | |
| Architecture | BA/BArch | | | |
| Army ROTC (See Military Science) | | | | |
| Art (Visual Arts) | BCA | | • | Honors |
| Biology | BA/BS MA/MS | • | • | Honors |
| Biology with option in Medical Technology | BA | | | |
| Business Administration | BA/MBA | | | Cooperative Education |
| Chemistry | BA/BS/MS | | • | Honors |
| Chemistry with option in Medical Technology | BA | | | |
| Child and Family Development | BA | • | | |
| Civil Engineering | BSCE/MSE | | | |
| Civil Engineering Technology | BET | | | |
| Communication Studies | | • | | |
| Computer Science | BA/BS/MS | • | | |
| Counseling and Guidance | MHDL (Agency) MEd (School) | | • | CAS (School) |
| Criminal Justice | BS/MS | • | | |
| Curriculum and Instruction | MEd | | • | CAS |
| Curriculum and Instruction Specialist (Supervision) | MEd | | • | CAS |
| Dance | BCA | • | • | Honors |
| Early Childhood Education See also Elementary Education | BA/MEd | | • | CAS |
| Earth Sciences | BA/BS | • | • | Cooperative Education |
| Economics | BA | • | See Social Studies | Cooperative Education |

| Subject Area | Degree(s) | Minor | Teacher Certification | Other |
|---|---|---|---|---|
| Education<br>See specific topics: Curriculum and Instruction, Educational Administration, Elementary Education, Health Education, Intermediate Education, Middle Grades, Reading Education, Secondary Education, Special Education, Teaching English as a Second Language | Baccalaureate and Master's | | • | Doctoral Studies* |
| Educational Administration | MEd | | • | CAS<br>Doctoral Studies* |
| Electrical Engineering | BSEE/MSE | | | Doctoral Studies* |
| Electrical Engineering Technology | BET | | | |
| Elementary (Early Childhood or Intermediate) Education | BA/MEd | | • | CAS |
| Engineering<br>See specific topic areas: Civil Engineering, Electrical Engineering, Manufacturing Engineering, Mechanical Engineering | Baccalaureate and Master's | | | Doctoral Studies* |
| Engineering Technology<br>See specific topic areas: Civil Engineering Technology, Electrical Engineering Technology, Manufacturing Engineering Technology, Mechanical Engineering Technology | BET | | | |
| English | BA/MA | | • | Honors |
| Foreign Languages<br>French, German or Spanish | BA | • | • | Certificate in Translating |
| French | BA | • | • | Certificate in Translating |
| Geography | BA/BS/MA | • | See Social Studies | Cooperative Education |
| German | BA | • | • | Certificate in Translating |
| Gerontology | | • | | |
| Health and Physical Education | | | | Athletic Training Endorsement |
| Health Education | MEd | | • | |
| History | BA/MA | • | • See Social Studies | Honors |
| Human Services | BA | | | |
| Interdisciplinary Honors | | | | Honors |
| Intermediate Education<br>See also Elementary Education (Early Childhood and Intermediate) | BA/MEd | | • | CAS |

**PROGRAMS AND DEGREES OFFERED** (continued from page 37)

| Subject Area | Degree(s) | Minor | Teacher Certification | Other |
|---|---|---|---|---|
| International Studies | | • | | |
| Manufacturing Engineering Technology | BET | | | |
| Mathematics | BA/BS/MA | • | • | Honors; Cooperative Education |
| Mathematics Education | MA | | • | CAS |
| Mechanical Engineering | BSME/MSE | | | |
| Mechanical Engineering Technology | BET | | | |
| Middle Grades Education | BA/MEd | | • | |
| Military Science Area (Army ROTC) | | | | |
| Music | BCA | • | | Honors |
| Nursing | BSN/MSN | | | |
| Performing Arts Dance, Music, or Theater | BCA | • | Dance | Honors |
| Philosophy | BA | • | | |
| Physics | BA/BS | • | • | Honors |
| Political Science See also Public Administration | BA | • | See Social Studies | |
| Psychology | BA/MA | • | | Honors |
| Public Administration | MPA | | | |
| Reading Education | MEd | | • | |
| Religious Studies | BA | • | | |
| School Administration | MEd | | • | CAS |
| Secondary Education English, History, Mathematics | MEd | | • | CAS (English) CAS (History) CAS (Mathematics) |
| Social Studies Anthropology, Economics, Geography, History, Political Science, Sociology (Contact the Coordinator of Certification in the College of Education and Allied Professions for more information.) | | | • | |
| Social Work | | | | Concentration |
| Sociology | BA/MA | • | See Social Studies | |
| Spanish | BA | • | • | Certificate in Translating |
| Special Education | BA/MEd | | • | CAS |

| Subject Area | Degree(s) | Minor | Teacher Certification | Other |
|---|---|---|---|---|
| Supervision | MEd | | • | CAS (Curriculum and Instruction Specialist) |
| Teaching English as a Second Language | MEd | | • | |
| Theater | BCA | • | | Honors |
| Visual Arts (Art) | BCA | | • | Honors |
| Women's Studies | | • | | |

*The University of North Carolina at Charlotte participates in two interinstitutional degree programs at the doctoral level: Doctor of Education (Ed.D.) in educational administration and Doctor of Philosophy (Ph.D.) in engineering. The Ed.D. is awarded by The University of North Carolina at Chapel Hill; the Ph.D is conferred by North Carolina State University.

# Application Dates

Students interested in enrolling at UNCC are advised to file their applications for admission according to the schedule below or earlier if possible. The schedule is based on the amount of time required to process an application and inform the student of the admission decision. During periods of rapid growth or in programs which have limitations on the number of new students they can accept, available space may be filled earlier than the dates indicated below.

| Term of Entry | Application Should Be Filed By | Application Should Be Completed By |
|---|---|---|
| First Summer Term | May 1 | May 15 |
| Second Summer Term | June 1 | June 15 |
| Fall Semester | July 1 | July 15 |
| Spring Semester | November 15 | December 1 |

**The University may alter these application dates without further notice in accordance with available resources and the enrollment limitation established by the North Carolina General Assembly.**

Students planning to live on campus should apply for admission and request a housing application as early as possible. *Admission to UNCC does not guarantee residence hall space* because the demand for on-campus housing is usually greater than the supply. Students who request on-campus housing will receive a housing application with their notice of admission. Students are advised to complete the housing application and return it and the required prepayment promptly to increase the possibility of getting space in one of the residence facilities. Early application for housing is particularly important for physically impaired students because of the limited number of housing units designed to accommodate their needs.

If a student should decide not to enroll for the semester he/she requested, The University will hold his/her application in an inactive file for one year. During this year The University will reconsider the application for another term upon written request. Updated transcripts and other credentials may be requested if appropriate.

# Admission to The University

The University considers all applications without regard to race, color, sex, national origin, handicapped status, age or religion. The University reserves the right to withhold the admission of any applicant who fails to meet any of the requirements for admission. In addition, it reserves the right to restrict enrollments when necessary because of budgetary or other constraints. Applications for either regular semester or the summer terms should be submitted and completed no later than the dates published in this *Catalog*. In some programs, the vacancies will be filled several weeks prior to those deadlines.

All applicants for admission are reviewed as soon as the required credentials are received. All relevant factors are considered, with major emphasis being placed on the academic history of the applicant. The intent of The University is to offer admission to those applicants whose credentials indicate a strong likelihood for success in their selected curricula. The Admissions Advisory Committee may make exceptions to the minimum criteria for applicants who are judged to have potential or talent not revealed by test scores and high school class rank.

Not all applicants who meet the minimum requirements can be accommodated in some of the programs. Architecture, accounting and business administration programs have more qualified applicants than spaces to accommodate them. Thus, these programs select the best qualified from those meeting the minimal requirements.

Notification dates of admission will vary by program. The College of Architecture invites a number of its top applicants to come to the campus for an interview. Consequently, notification of admission to this program will be later than for other programs. Applicants to most programs may expect to receive notification of the admission decision within a month after all required credentials are received by The University.

Evidence of good physical and mental health is required prior to registration. A medical report form is sent to successful applicants along with the notice of admission. **As of July 1, 1986, state law requires all students entering college in the state of North Carolina to meet the immunization requirements described on page 46. A family physician or the Health Department must verify that the student has had necessary immunizations.**

Persons seeking application forms and information about undergraduate and graduate programs should address inquiries to:

Office of Admissions
University of North Carolina at Charlotte
Charlotte, North Carolina 28223
Telephone: 704/547-2211

# Requirements for Undergraduate Admission

## GENERAL REQUIREMENTS FOR UNDERGRADUATE ADMISSION

1. Application in writing to the Admissions Office.
2. Satisfactory evidence of good character.
3. Satisfactory record of scholastic achievement.
4. Application fee of $15, which is neither deductible nor refundable.
5. The applicant bears the responsibility for supplying The University with all required credentials. Nondisclosure of an applicant's complete academic history will result in immediate dismissal from The University.

## ADDITIONAL ADMISSIONS REQUIREMENTS FOR FOREIGN APPLICANTS

1. Submission of Official Scores on the Test of English as a Foreign Language or the Michigan Test, if the applicant is from a non-English speaking country.
2. A Certificate of Financial Responsibility must be filed showing the applicant's financial resources during his/her stay in the United States.
3. Under no circumstances will an I-20 form be issued until the applicant has been admitted to a degree program.

## REQUIREMENTS FOR CONSIDERATION FOR ADMISSION TO FRESHMAN STANDING

*Admission of freshman students is based on the predicted college grade point average (PGA), a combination of secondary school rank and test score in which class rank approximately is weighted twice as important as test score.*

1. Transcript of secondary school study which identifies the applicant as a graduate of an accredited secondary school and bears a recommendation by a school official. The record should show the grades through the eleventh year, senior year courses in progress, rank in class and pertinent test data. A high school equivalency certificate or G.E.D. may be submitted in lieu of a secondary school diploma.
2. **Prior to the fall semester 1988,** applicants for admission must present 16 acceptable units, 13 of which are to be academic (college preparatory) courses and are expected to include four units of English, three units of algebra and geometry, two units of social science, one unit of natural science, and two units of the same foreign language. *Students admitted to The University who have not completed the expected units in mathematics and a foreign language will be required to complete appropriate courses in these areas during their first year at UNCC.*

   **Beginning with the fall 1988 semester,** applicants for admission must present four course units in English, emphasizing grammar, composition and literature; three course units in mathematics,

including Algebra I, Algebra II, and geometry, or a higher level mathematics course for which Algebra II is a prerequisite; two course units in social studies, including one unit in U.S. history; and three course units in science, including at least one unit in a life or biological science (for example, biology), at least one unit in a physical science (for example, physical science, chemistry, physics), and at least one laboratory course; and two units in one foreign language. In addition, it is *recommended* that prospective students complete one foreign language course unit and one mathematics course in the twelfth grade, one unit of world history and one-half unit of health education.

*Foreign Language.* Students who have not completed the expected secondary school units of a foreign language may fulfill that requirement by successfully completing two semesters of an elementary language offered (1) during their first year of study at UNCC or (2) in the summer program of an accredited college or community college prior to enrollment at The University. Students receive University course credit for these courses.

*Mathematics.* Students who have not completed the expected secondary school units in mathematics may fulfill that requirement by successfully completing appropriate courses offered (1) in the summer programs of secondary schools, community colleges and technical institutes prior to enrollment at The University or (2) during their first year of study at UNCC. Students who have above average grades in secondary school mathematics may enroll in an entry level mathematics course at The University which will fulfill the secondary school requirement and for which the student will receive University credit. It is recommended that students with average grades and students who have not had mathematics for more than four years consider taking a lower level course. Although The University does not offer or award credit for precollege courses, such courses are readily available from nearby institutions. The Admissions Office will provide information upon request.

3. An **official score report** from the American College Testing Program (ACT) or the Scholastic Aptitude Test of the College Entrance Examination Board (SAT).

   While The University recognizes that test scores may be less important than academic history in predicting the chances for collegiate success, applicants are expected to present a satisfactory combination of secondary school class rank and SAT or ACT scores. Generally, applicants who rank in the upper half of their graduating classes and present either a total SAT score of 800 with neither the Verbal nor the Math scores below 350 or a composite ACT score of 18 with neither the English nor the Math score below 16 will be offered admission to UNCC.

   Students may obtain test information and application forms from their school counselors or by writing to:

   American College Testing Program
   P.O. Box 168
   Iowa City, Iowa 52240
   (UNCC Code — 3163)

   Educational Testing Service
   P.O. Box 592
   Princeton, New Jersey 08540
   (UNCC Code — 5105)

4. Transfer applicants who present fewer than 24 hours of transferable work are considered *applicants for freshman standing* and, in addition to requirements listed above, they must have attained at least a *C* average in their post-secondary study, as evidenced by official transcripts mailed directly to the Office of Admissions by each institution attended.

**Special Requirements for Acceptance into Accounting.** Applicants must have a predicted college grade point average (PGA) of at least 2.2 according to The University's calculation.

**Special Requirements for Acceptance into Architecture.** Applicants must present algebra, trigonometry, plane and solid geometry, or the equivalent in integrated courses and a Math score of at least 400 on the SAT or 18 on the ACT. Applications for the fall semester are accepted through January 31 each year and a personal interview and letter of intent are required.

**Special Requirements for Acceptance into Business Administration.** Applicants are expected to present a Math score of at least 400 on the SAT or 18 on the ACT. Beginning Fall 1988, applicants must also have a predicted college grade point average (PGA) of at least 2.1 according to The University's calculation.

**Special Requirements for Acceptance into Computer Science.** Applicants must present a predicted college grade point average (PGA) of at least 2.5, according to The University's calculation and satisfactory completion of Algebra II, or the equivalent.

**Special Requirements for Acceptance into Engineering.** All applicants must present acceptable grades in algebra, trigonometry, plane and solid geometry, or the equivalent in integrated courses.

A. A student satisfying
*SAT MATH $>$ 500, SAT VERBAL $>$ 400, HS Rank $>$ 1/2
or
*SAT MATH $>$ 500, SAT VERBAL $>$ 350, PGA $>$ 2.5, HS Rank $>$ 1/2
may be admitted directly to the lower division of a department. The lower division encompasses the first two years of *Catalog*-specified courses in a department.

B. A student not admitted to the lower division but having SAT MATH $>$ 450, SAT VERBAL $>$ 350, HS Rank $>$ 1/2, will be admitted to the Freshman Engineering Program in the College of Engineering. The student may indicate the major of interest as an aid in the selection of his/her adviser.

*Or ACT equivalents.

**Special Requirements for Acceptance into Mathematics.** Applicants must present a predicted college grade point average (PGA) of at least 2.5, according to The University's calculation and satisfactory completion of Algebra II, or the equivalent.

**Special Requirements for Acceptance into Nursing.** Nursing applicants must present biology and chemistry.

**Early Admission.** The University will admit specially talented high school students after they have completed the eleventh grade (achieved bona fide senior status as defined by their respective school systems) provided they meet other standards required for freshman admission.

A letter of recommendation from the student's secondary school principal is required for consideration for early admission. Applicants admitted through the early admission program have usually shown outstanding ability in their overall academic performance.

**Advanced Placement Course Credit (APP).** Students may receive credit for Advanced Placement Program Tests of the College Entrance Examination Board in accordance with academic regulations published in this *Catalog*. Students must request that official AP test results be sent directly to the Office of Undergraduate Admissions, (Code 5105).

**Admission of North Carolina Scholars.** Students in the North Carolina Scholars Program may be confident of their admission to UNCC. An application for admission along with supportive materials, including SAT scores, is necessary only for matriculation, program evaluation and advising upon enrollment.

## REQUIREMENTS FOR CONSIDERATION FOR ADMISSION OF TRANSFER STUDENTS

*Applicants who have attended other post-secondary institutions without earning at least 24 semester hours in transferable courses are considered to be applicants for freshman standing and must also meet the requirements listed in the preceding section.*

1. Official transcripts must be mailed directly to the Office of Admissions by each post-secondary institution an applicant has attended.

2. An official secondary school transcript. (Applicants who have earned an A.A., A.A.S. or baccalaureate degree are not required to send a secondary school transcript.)

3. Applicants for transfer admission must present a minimum academic average of *C* based on *all* post-secondary courses attempted and be in good standing at the last institution attended.

4. Applicants for admission to Architecture, Engineering and Nursing must meet the additional mathematics and science requirements for admission as a freshman. Those requirements may be satisfied with either appropriate high school or college courses.

**Special Requirements for Acceptance into Accounting.** Beginning Fall 1986, applicants must present a grade point average of 2.75 or more in the following ten courses or the portion they have completed: ENGL 1101 and 1102; MATH 1101, 1120 and 1220; CSCI 1100; ECON 2101 and 2102; and ACCT 2121 and 2122. Applicants who have not completed all ten courses also must present an overall GPA of 2.5 or more. A GPA of 2.75 or more in the ten courses is required for enrollment in the junior level accounting courses beginning with ACCT 3138.

**Special Requirements for Acceptance into Architecture.** A personal interview and a letter of intent are required for consideration for acceptance into Architecture.

**Special Requirements for Acceptance into Business Administration.** Applicants must present a grade point average of at least 2.5 (on a 4.0 scale) for acceptance into Business Administration. Beginning Fall 1988, applicants must present an overall grade point average of at least 2.5 (on a 4.0 scale) as well as an average of 2.5 or more in the following ten courses or the portion they have completed: English 1101 and 1102; Mathematics 1101, 1120 and 1220; Accounting 2121 and 2122; Economics 2101 and 2102; and Business 2130. A GPA of 2.5 or more in the ten courses is required for enrollment in junior-level business courses.

**Special Requirements for Acceptance into Computer Science.** Applicants must present a grade point average of at least 2.5 (on a 4.0 scale) in all previous college courses with no grade less than *C* in computer science courses previously undertaken.

**Special Requirements for Acceptance into Criminal Justice.** Graduates of two-year institutions who wish to enter the General concentration, which is one of the five concentrations offered in the Criminal Justice program, must have earned an A.A.S. degree with a major in a criminal justice area.

Upon acceptance of the A.A.S. degree, the successful applicant may be granted up to 64 semester hours which are valid only toward the General concentration.

**Special Requirements for Acceptance into Engineering.** Applicants must present a grade point average of at least 2.5 (on a 4.0 scale). All transfer students will be admitted to the lower division of a department, and evaluation of transfer credits to a program will follow the guidelines of the North Carolina Engineering Transfer Board. The actual determination of transfer credits applicable toward degree requirements will be the responsibility of the department chair. Transfer students not satisfying the GPA $>$ 2.5 but from an ABET accredited engineering program may be admitted on an individual basis. Recommendations for such admission must come from the chair of the major department.

**Special Requirements for Acceptance into Engineering Technology.** Technical institute graduates who wish to enter the engineering technology program at The University of North Carolina at Charlotte must meet the following requirements:

1. Earn an Associate in Applied Science degree, or its equivalent, in a field appropriate to the option which the student plans to enter.

2. Achieve an overall grade point average (based on the 4.0 scale) of at least 2.2, or 2.5 for entry into the Manufacturing Engineering Technology track, on all courses taken at the technical institute. Exceptions to this requirement will be considered on the basis of individual merit.

3. Complete satisfactorily the prerequisite background courses for the option which the student plans to enter.

Acceptance of the A.A.S. degree indicates the acceptance of 64 semester hours toward the Bachelor of Engineering Technology degree only. These hours become invalid when a student transfers to any other degree program.

**Special Requirements for Acceptance into Mathematics.** Applicants must present a grade point average of at least 2.5 (on a 4.0 scale) in all previous college courses with no grade of less than *C* in mathematics courses previously undertaken.

**Special Requirements for Acceptance into Nursing.** Applicants must present a grade point average of at least 2.5 (on a 4.0 scale). Registered Nurses who are currently licensed to practice in North Carolina may be admitted to the Pathway Program, an upper division program leading to the Bachelor of Science in Nursing degree, by meeting special requirements published in the Nursing section of this *Catalog*.

## READMISSION OF FORMER STUDENTS

A student must make application for readmission to The University if he/she did not complete the last *regular* semester, fall or spring, prior to the semester or summer term for which he/she wishes to register. Applications should be filed at the Admissions Office in accordance with the published dates.

Readmission decisions are based on a review of the student's complete University record, with major emphasis given to the academic history and the probability for success in the major department and in terms of the general degree requirements.

Students who leave UNCC and subsequently earn an Associate of Arts degree may apply for admission as a transfer student and transfer a maximum of 64 semester hours. Hours earned and the grade point average at UNCC will be computed only on work attempted after readmission.

For information on readmission after suspension for academic reasons, see page 69.

**Second Baccalaureate Major.** Students who have earned a bachelor's degree from UNCC may apply for readmission into a program leading to a second major. See requirements which follow.

**Two Year Rule for Undergraduate Students.** Any undergraduate student who has not been enrolled at UNCC for a minimum period of 24 consecutive months is eligible for *one* readmission under the "two year" rule. Colleges and departments which have published admission or continued enrollment standards that are more restrictive than general University requirements retain the right to admit or to deny admission to a specific program.

If a student is readmitted under the provisions of the two year rule, then only those courses for which the student has received a grade of *C* or better (or *H* or *P*) can be used for academic credit. His or her grade point average will be based only on work attempted after readmission. Eligibility for continued enrollment is determined as in the case of transfer students.

To qualify for graduation with honors, a student must complete at least 48 hours in residency after readmission to UNCC which are used in computing the grade point average.

## ADMISSION FOR SECOND BACCALAUREATE DEGREE

Students who have earned bachelor's degrees from UNCC or other accredited institutions may apply for admission to a program leading to a second degree of the same level if the following requirements are met:

1. Application in writing must be made to the Admissions Office in accordance with the published application dates.
2. The major field selected must be different from that of the first degree.
3. The degrees sought must be different from the first when that degree was granted by UNCC.
4. Applicant must meet the requirements for acceptance into the selected field.

## OTHERS ELIGIBLE FOR ADMISSION

**Auditors.** With the consent of the instructor, any student eligible for admission to The University may register as an *auditor* for any class in which space is available. The fees and procedures are the same as those for a credit enrollment. (See page 66 of this *Catalog* concerning academic regulations.)

**Escrow Program Participants.** The Escrow Program provides an opportunity for highly qualified students to take college credit courses while enrolled in secondary school. Records of credit earned will be maintained for use at The University or at another institution of higher learning.

Applicants recommended for participation in the program usually have shown great ability in particular academic areas. The recommendations are normally made by the secondary school principal.

Requests for additional information and application blanks should be directed to the Office of Admissions at UNCC.

**Senior Citizens.** Residents of North Carolina who have attained the age of 65 and who meet applicable admission standards may enroll tuition-free on a space-available basis. Senior citizens who enroll in these offerings of the Performing and Visual Arts Departments will be obligated to pay the special fees which are assessed all students who enroll in these Departments. Interested persons should contact the Office of Admissions.

**Non-degree Students.** Non-degree students are those who are not candidates for degrees and who do not file complete academic credentials. They may enroll in undergraduate courses at UNCC until they have attempted a total of 18 semester hours with grade evaluation, but regular degree students will have preference for a place in classes. Non-degree students are expected to conform to the standards required of all students. After reaching the 18-hour limitation, non-degree students must be reviewed and be acceptable for regular degree status before enrolling again at UNCC.

Non-degree students who have done previous college work (including UNCC) must be eligible to return to the institution last attended. This classification is not open to foreign nationals who are on student visas.

The student must be 18 years of age or over and must understand at the time of his/her registration that the work completed in non-degree student status will be evaluated in terms of major department and degree requirements only after the student's formal admission to a degree program.

**Transient Students (Visitors).** Students enrolled at other colleges and universities who have written permission from their institutions to take specified courses at The University in a given semester or term may be admitted as transient students on a space available basis.

## IMMUNIZATION REQUIREMENTS

**As of July 1, 1986, state law requires all students entering college in the state of North Carolina to meet the immunization requirements described below.** A family physician or the Health Department must verify that the student has the necessary immunizations. UNCC's Report of Medical History form, provided by the Office of Admissions, may be used for this purpose.

Students who attended high school in North Carolina since 1976 should have immunization records on file with the high school and a copy may be obtained from that school.

Students who do not have a complete immunization record on file when beginning classes will have 30 days to obtain the required immunizations. A campus clinic will be available. Students who are not in compliance within 30 days of the first day of class will be required to withdraw from classes.

Evening and off-campus students are exempt. Medical and religious exemptions can be requested through the Health Center. Questions and forms should be directed to: UNCC Student Health Service, Charlotte, NC 28223.

| A. STUDENTS 17 YEARS OF AGE AND YOUNGER. | B. STUDENTS 18 YEARS OF AGE THROUGH 29 YEARS OF AGE. | C. STUDENTS 30 YEARS OF AGE OR OLDER. |
|---|---|---|
| **REQUIRED:**<br>3 DTP *(Diptheria, Tetanus, Pertussis)* or Td *(Tatanus-diptheria)* doses.<br>3 POLIO *(oral)* doses.<br>*1 MEASLES *(Rubeola)* dose, on or after the first birthday.<br>*1 RUBELLA dose. | **REQUIRED:**<br>3 DTP or Td doses.<br>*1 MEASLES *(Rubeola)* dose, on or after the first birthday.<br>*1 RUBELLA dose. | **REQUIRED:**<br>3 DPT or Td doses. |
| **RECOMMENDED:**<br>1 Td dose within last 10 years. | **RECOMMENDED:**<br>1 Td dose within last 10 years. | **RECOMMENDED:**<br>1 Td dose within last 10 yrs. |

**History of physician-diagnosed measles disease is acceptable.*
*Only laboratory proof of immunity to rubella is acceptable.*

# Financial Information

# Student Expenses and Fee Payment

Charges for tuition and fees vary according to the student's status as a resident or nonresident of North Carolina. A nonresident student must pay a higher rate of tuition than a legal resident.

**The University reserves the right, with the approval of proper authorities, to make changes in tuition and fees at any time.**

## STUDENT EXPENSES

Graduate students taking nine or more semester hours and undergraduate students taking 12 or more semester hours of work during a regular semester will be charged full tuition and fees. Students taking fewer than the nine hours for graduates and 12 hours for undergraduates will be charged a prorated portion of tuition and fees as specified in the fee schedules on pages 53-54.

Costs for the regular academic year for a typical full-time North Carolina student are $749 in tuition and fees and $2,274 to $2,650 for housing and food, depending on the options chosen. For a typical out-of-state student, annual tuition and fees are $3,997.

The estimated average cost of books and supplies per semester varies by area and level of study and ranges from $120 to $200. Beginning students in architecture and engineering should allow an additional expense of $100 to $150 for drawing instruments, calculator and supplies. Uniforms and supplies for nurses cost approximately $150.

In addition to the above, the student should take into consideration the cost of clothing, snacks, recreation, laundry, transportation, etc., in planning his/her expenses for each semester.

## FEE PAYMENT

Tuition and fees are due and payable on the day of registration. Advance registration billing and due dates of fees vary with the term. Checks and money orders should be made payable to The University of North Carolina at Charlotte. Visa and MasterCard are accepted.

**Returned Check Policy.** In the event that a check is returned by the bank, a certified letter will be sent to the maker, informing him/her that a penalty of $10 has been assessed and the account must be settled within ten (10) working days or The University will consider the check to be a bad check and will process it accordingly. A hold will be placed on the student's record until the bad check is covered and the penalty is paid. The student will also be dropped from enrollment for the current session and will not be allowed to re-enroll until the check is cleared.

# Tuition and Fees

## RESIDENCE STATUS FOR TUITION PURPOSES

The basis for determining the appropriate tuition charge rests upon whether a student is a resident or a nonresident for tuition purposes. Each student must make a statement as to the length of his or her residence in North Carolina, with assessment by the institution of that statement to be conditioned by the following:

**Residence.** To qualify as a resident for tuition purposes, a person must become a legal resident and remain a legal resident for at least 12 months immediately prior to classification. Thus, there is a distinction between legal residence and residence for tuition purposes. Furthermore, 12 months' legal residence means more than simple abode in North Carolina. In particular it means maintaining a domicile (permanent home of indefinite duration) as opposed to "maintaining a mere temporary residence or abode incident to enrollment in an institution of higher education." The burden of establishing facts which justify classification of a student as a resident entitled to in-state tuition rates is on the applicant for such classification, who must show his or her entitlement by the preponderance (the greater part) of the residentiary information.

**Initiative.** Being classified a resident for tuition purposes is contingent on the student's seeking such status and providing all information that the institution may require in making the determination.

**Parents' Domicile.** If an individual, irrespective of age, has living parent(s) or a court-appointed guardian, the domicile of such parent(s) or guardian is, prima facie, the domicile of the individual; but this prima facie evidence of the individual's domicile may or may not be sustained by other information. Further, nondomiciliary status of parents is not deemed prima facie evidence of the applicant child's status if the applicant has lived (though not necessarily legally resided) in North Carolina for the five years preceding enrollment or re-registration.

**Effect of Marriage.** Marriage alone does not prevent a person from becoming or continuing to be a resident for tuition purposes, nor does marriage in any circumstance insure that a person will become or continue to be a resident for tuition purposes. Marriage and the legal residence of one's spouse are, however, relevant information in determining residentiary intent. Furthermore, if both a husband and his wife are legal residents of North Carolina and if one of them has been a legal resident longer than the other, then the longer duration may be claimed by either spouse in meeting the 12-month requirement for in-state tuition status.

**Military Personnel.** A North Carolinian who serves outside the State in the armed forces does not lose North Carolina domicile simply by reason of such service. Also, students from the military may prove retention or establishment of residence by reference, as in other cases, to residentiary acts accompanied by residentiary intent.

Personnel permanently stationed on active military duty in North Carolina and their dependents are eligible for in-state tuition rates. Eligibility to be charged in-state tuition rates must be established through submission of an institutional application.

**Grace Period.** If a person (1) has been a bona fide legal resident, (2) has consequently been classified a resident for tuition purposes, and (3) has subsequently lost North Carolina legal residence while enrolled at a public institution of higher education, that person may continue to enjoy the in-state tuition rate for a grace period of 12 months measured from the date on which North Carolina legal residence was lost. If the 12 months ends during an academic term for which the person is enrolled at a State institution of higher education, the grace period extends, in addition, to the end of that term. The fact of marriage to one who continues domiciled outside North Carolina does not by itself cause loss of legal residence, marking the beginning of the grace period.

**Minors.** Minors (persons under 18 years of age) usually have the domicile of their parents, but certain special cases are recognized by the residence classification statute in determining residence for tuition purposes.

(a) If a minor's parents live apart, the minor's domicile is deemed to be North Carolina for the time period(s) that either parent, as a North Carolina legal resident, may claim and does claim the minor as a tax dependent, even if other law or judicial act assigns the minor's domicile outside

North Carolina. A minor thus deemed to be a legal resident will not, upon achieving majority before enrolling at an institution of higher education, lose North Carolina legal residence if that person (1) upon becoming an adult "acts, to the extent that the person's degree of actual emancipation permits, in a manner consistent with bona fide legal residence in North Carolina" and (2) "begins enrollment at an institution of higher education not later than the fall academic term next following completion of education prerequisite to admission at such institution."

(b) If a minor has lived for five or more consecutive years with relatives (other than parents) who are domiciled in North Carolina and if the relatives have functioned during this time as if they were personal guardians, the minor will be deemed a resident for tuition purposes for an enrolled term commencing immediately after at least five years in which these circumstances have existed. If under this consideration a minor is deemed to be a resident for tuition purposes immediately prior to his or her eighteenth birthday, that person on achieving majority will be deemed a legal resident of North Carolina of at least 12 months duration. This provision acts to confer in-state tuition status even in the face of other provisions of law to the contrary; however, a person deemed a resident of 12 months duration pursuant to this provision continues to be a legal resident of the State only so long as he or she does not abandon North Carolina domicile.

**Lost but Regained Domicile.** If a student ceases enrollment at or graduates from an institution of higher education while classified a resident for tuition purposes and then both abandons and reacquires North Carolina domicile within a 12-month period, that person, if he or she continues to maintain the reacquired domicile into re-enrollment at an institution of higher education, may re-enroll at the in-state tuition rate without having to meet the usual 12-month durational requirement. However, any one person may receive the benefit of this provision only once.

**Change of Status.** A student admitted to initial enrollment in an institution (or permitted to re-enroll following an absence from the institutional program which involved a formal withdrawal from enrollment) must be classified by the admitting institution either as a resident or as a nonresident for tuition purposes prior to actual enrollment. A residence status classification once assigned (and finalized pursuant to any appeal properly taken) may be changed thereafter (with corresponding change in billing rates) only at intervals corresponding with the established primary divisions of the academic year.

**Transfer Students.** When a student transfers from one North Carolina public institution of higher education to another, he or she is treated as a new student by the institution to which he or she is transferring and must be assigned an initial residence status classification for tuition purposes.

**Appeal Procedure.** A student may request a review of decisions by the Admissions Office or Office of the Registrar relating to in-state or out-of-state residence for tuition purposes through the Auxiliary Services Office. Appeals should be submitted in writing, stating all the pertinent facts. Backup material should accompany the appeal. Address, telephone number and social security number should be included with the appeal.

# Summary of Tuition and Fees Per Semester

*Following are tuition and fees authorized for* **1986-87.** *They are subject to change by the appropriate authorities.*

| UNDERGRADUATES | | | GRADUATES* | | |
|---|---|---|---|---|---|
| | Resident | Non-Resident | | Resident | Non-Resident |
| 0 Hrs. | $ 79.50 | $ 485.50 | 0 Hrs. | $ 76.00 | $ 396.00 |
| | | | 0 Hrs. (Thesis Only) | 94.00 | 257.00 |
| 1-5 Hrs. | 79.50 | 485.50 | 1-2 Hrs. | 79.50 | 485.50 |
| 6-8 Hrs. | 178.00 | 990.00 | 3-5 Hrs. | 131.50 | 943.50 |
| 9-11 Hrs. | 323.50 | 1541.50 | 6-8 Hrs. | 229.00 | 1447.00 |
| 12 or more Hrs. | 374.50** | 1998.50** | 9 or more Hrs. | 374.50** | 1998.50** |

**Post-baccalaureate students who are taking* **only** *undergraduate courses will pay tuition and fees at the undergraduate rate. Post-baccalaureate students taking one or more graduate credit courses will pay tuition and fees at the graduate rate for* **all** *courses.*

***The following Student Activities Fees are included in the full-time tuition and fee amounts. Fees per semester are:*

| | |
|---|---|
| *Student Center Facilities* | *$ 10.00* |
| *Student Activity* | *15.50* |
| *Student Center Operating* | *47.00* |
| *Physical Education Facilities* | *6.00* |
| *Health Center* | *30.00* |
| *Athletic* | *54.00* |
| *Intramural* | *6.00* |
| *Student I.D.* | *1.00* |
| *Total fees per full time student per semester* | *$169.50* |

## Room and Board Per Semester

| | |
|---|---|
| Residence Hall Apartment | $698.00 to $776.00 |
| Residence Hall — Double Room | $588.00 |
| Residence Hall — Single Room (if available) | $887.00 |
| 19-Meal Plan (7 Days) | $581.00 |
| 14-Meal Plan (7 Days) | $575.00 |
| 10-Meal Plan (7 Days) | $476.00 |
| 5-Any Meal Plan (any 5 meals per week, Monday-Friday) | $240.00 |

*Note: Residence hall space is not available to married or part-time students.*

## Special Assessments (per semester except where indicated otherwise)

| | |
|---|---|
| Performing Arts Fee | $20.00 to $90.00 |
| Nursing Malpractice Insurance (per academic year) | $12.50 |
| National League for Nursing Achievement Test (per test) | $27.00 |
| Scuba Diving (HPED 2219) | $60.00 |
| Advance Scuba Diving (HPED 2220) | $35.00 |
| Physical Education Course Fees | |
| First Course | $15.00 |
| Each Additional Course | $ 6.00 |
| Cooperative Experience Fee | $51.00 |
| Engineering Laboratory Fee | $25.00 |
| Biology Lab (upper level) | $15.00 |
| Biology Lab (lower level) | $10.00 |
| Chemistry Lab (upper level) | $15.00 |
| Chemistry Lab (lower level) | $10.00 |
| Earth Science Lab (upper level) | $15.00 |
| Earth Science Lab (lower level) | $10.00 |
| Computer Science Lab (upper level) | $15.00 |
| Computer Science Lab (lower level) | $10.00 |
| Physics Lab (upper level) | $15.00 |
| Physics Lab (lower level) | $10.00 |
| Health Education Course Fee | $38.00 |
| Microcomputer Lab Course Fee | $15.00 |
| Nursing Lab Fee | $10.00 |

*continued on next page*

**Summary of Tuition and Fees,** continued

**Other Fees**

| | |
|---|---|
| Application Fee | $15.00 |
| New Student Fee (Undergraduates only) | $13.00 |
| Late Registration Fee | $10.00 |
| Graduation Fee | $18.00 |
| Credit By Exam | |
| Written Exam | $15.00 |
| Laboratory Exam | $25.00 |
| Combination Written & Laboratory Exam | $30.00 |
| Motor Vehicle Registration Fee (per academic year) | $36.00 |

**Special Assessments.** Many courses carry special assessment fees to cover the cost of supplies or special material consumed in the courses or labs. A complete list of special assessments can be found in the preceding chart.

**Application Fee.** Applicants for admission are required to submit a $15 application fee with the application form. The fee is not deductible and is not refundable.

**New Student Fee.** All new degree-seeking undergraduate students (freshmen and transfers) will be required to pay a one-time $13 new student fee.

**Housing Deposit.** Admission to UNCC does not guarantee residence hall space. Arrangements for on-campus housing are made, after admission, with the Director of Residence Life. See the Correspondence Directory on the inside front cover for the proper address. On-campus housing is not available for married or part-time students.

All housing applications must be submitted with a $100 deposit. The deposit is refundable, minus any outstanding damages and charges, upon departure from the residence life system. No deposit refunds for fall semester are made after June 1. No refunds for spring semester are made after November 30. All students living in the residence halls will have an $8 Residence Hall Association fee included in their semester housing charges.

**Student Activities Fee.** A part of the general fee provides students with a program of cultural, recreational and entertainment activities. It pays for admission to many athletic contests, dramatic productions, activities sponsored by the University Program Board, social and entertainment functions, and for subscriptions to the campus newspaper and literary magazine.

**Graduation Fee.** Each member of the graduating class must pay a graduation fee of $18 at the time he/she applies for the degree. This fee includes the cost of the diploma and the rental of the cap and gown. No reduction of the fee is allowed for those receiving degrees *in absentia*. For graduate students, the cost of renting a hood is in addition to the $18 charge.

**Late Registration Fee.** A fee of $10 will be charged for those registering after the designated registration period each semester. *This fee is not refundable.* Applicants completing their applications before the initial registration day but whose applications could not be processed in time will not be assessed the late registration fee if required to register late.

**Credit By Examination Fee.** Fees for credit by examination are as follows: A written examination for a course will require a fee of $15. A laboratory examination requiring the arrangement of such things as laboratory materials will require a fee of $25. A combination of a laboratory and written examination will require a fee of $30.

## MOTOR VEHICLE REGISTRATION FEES

Students attending The University are required to register their motor vehicles(s) in order to park such vehicles on campus. Only vehicles owned by students, spouse, parent(s), or guardians may be registered. Unless increased by the Chancellor, the number of vehicles which a student may register is two. Presentation of State vehicle registration or appropriate proof of ownership shall be required. Registration of motor vehicles is to be accomplished as part of the University registration at the beginning of the fall semester of each year or at the time when the student first registers in The University and at the beginning of the fall semester of each year thereafter. A motor vehicle acquired by a student during a semester is to be registered.

The motor vehicle registration fee for students, faculty and staff members is as follows:*

$36 per academic year beginning with the fall semester;

$21 for the period beginning with the spring semester and ending with the beginning of the next fall semester;

$15 for the period beginning with a summer term and ending with the beginning of the next fall semester;

$12 for each semester, fall and spring and summer, in parking areas designated for night students after 4 p.m.;

$ 3 for one additional motor vehicle; and

$ 1 for a replacement sticker from one category to another with presentation of residue of old decal.

**Fees are subject to change.*

Night decals are available and are valid in any lot after 4 p.m. Cars with night decals must be parked at meters or toll gates from 8 a.m. to 4 p.m.

**Temporary Parking Permits.** Temporary parking permits are available for persons with cars registered on campus but who are required to drive a non-registered car for a short period while the registered car is being repaired, for new employees prior to receipt of first paycheck and for short-term visitors of resident status.

**Penalties for Parking Violations.** Violators of University Parking Regulations will incur a civil penalty of $3, $5, $10 or $15, depending on the seriousness of the violation. If not paid in five days, the penalty will be doubled and applied to the member's account with The University and collectable as a bad debt. Subsequent registration may be withheld for non-payment.

**Appeals of traffic and parking citations** may be filed in accordance with the statement of procedures on file in the Office of the Director of Public Safety.

# Refunds

## TUITION AND FEES REFUNDS

A student who officially withdraws from The University will receive a refund as follows:

a. during the first two weeks of the semester, a 90 percent refund of tuition and fees;

b. during the third and fourth weeks of the semester, a 40 percent refund of tuition and fees.

**After the first four weeks, tuition and fees are not refundable.**

*Exception:* Charges are refundable by administrative action on a prorata basis for the unexpired portion of the term for the following reasons: death of the student, withdrawal for adequate medical reason as certified by the University student health center or family doctor, death in the immediate family which necessitates student withdrawing, and dismissal or suspension from school. Appropriate documentation must be submitted to the Registrar.

*Summer School:* A student who officially withdraws from The University as indicated below will receive a refund of the full amount paid less a registration fee of $10: regular summer session, during the first *five* class days; three-week session, during the first *three* days; two-week session, during the first *two* class days. Summer school housing charges are refundable on a prorata basis, based on the number of weeks occupied. No other refunds are authorized except as follows: death of student, withdrawal for adequate medical reason as certified by the University student health center or family doctor, death in the immediate family which necessitates student withdrawing, and dismissal or suspension from school.

**HOUSING REFUNDS**

The rental period is for the entire academic year (fall and spring semesters) continuing until the end of the spring semester, regardless of occupancy date after the fall semester begins. Students may terminate at the end of the fall semester with no penalty only by written notification to the Residence Life Office by 5 p.m. Nov. 30. The housing and dining agreement binds the student and/or guarantor to the full amount of charges for the academic year except as noted below:

**Effect of Cancellation**

| *If cancellation date is:* | *Student is charged:* |
|---|---|
| a. By 5:00 p.m. June 1 for fall semester or 5:00 p.m. November 30 for spring semester | No charge (deposit refunded) |
| b. From June 1 to day before published housing opening date (fall); or December 1 to one day prior to housing opening date (spring) | $100 (for forfeiture of deposit) |
| c. Housing opening date to end of semester | Housing fee for entire semester |

*Note: Withdrawals from UNCC for academic or medical reasons will be refunded based on a pro-rata share of housing and dining.*

**Appeal Procedure**

Appeals to the above policy should be submitted in writing to Auxiliary Services, UNCC, Charlotte, NC 28223, or to the office in 422 Reese Building.

# Financial Aid

UNCC administers financial aid without regard to race, color, national origin, religion, sex, age or handicap.

The University offers a comprehensive program of student financial aids (scholarships, grants, loans and part-time employment) to assist both graduate and undergraduate students in meeting educational expenses. Reasonable educational expenses include tuition and fees, room and board, books, supplies, transportation, miscellaneous personal expenses and expenses related to maintenance of a student's dependents.

**Eligibility.** The programs of student financial aid are administered according to a nationally accepted policy that the family, meaning parents (or those acting in place of parents) and/or spouse, is responsible for a student's educational expenses. Therefore, eligibility for financial aid will be determined by a comparison of a budget (educational expenses as defined above) for the period of attendance with what the student's family can reasonably be expected to contribute.

A financial aid applicant will be considered for available assistance for which he/she is eligible if the student:

1. Completes the application process and related forms only after thoroughly reading all instructions.
2. Completes the admission application process and is accepted for enrollment at UNCC.
3. Is working toward a degree and not simply taking courses.

## APPLICATION PROCESS

It is necessary to complete one form to apply for the following programs:

Pell Grants (Undergraduates only)
Supplemental Educational Opportunity Grant
UNCC Grants
North Carolina Student Incentive Grant (NCSIG)
Guaranteed Student Loan*
National Direct Student Loan
Nursing Loan
UNCC Loans
College Work-Study Program
UNCC Scholarships

To apply for these programs, a student *must complete the Financial Aid Form of the College Scholarship Service* and mail it to that organization in Princeton, New Jersey. These forms are available in the UNCC Financial Aid Office and in high school counseling offices.

*The Guaranteed Student Loan requires a separate application in addition to the Financial Aid Form.

Certain UNCC scholarships require special application forms, which are available in the UNCC Student Financial Aid Office.

## RENEWAL PROCESS

Renewal of financial aid is based upon a student's making a clearly satisfactory record. The Financial Aid Form will be required each year that a student applies for financial aid.

## FINANCIAL AID PROGRAMS

### Loans

*National Direct Student Loan*—Applicants may request amounts based on financial need up to a total of $9,000 for a four-year degree and an aggregate total of $18,000 for graduate study. The interest rate is five percent, with repayment beginning nine months after graduation. To apply, an individual must complete the Financial Aid Form.

*Guaranteed Student Loans*—Qualified undergraduate applicants may borrow up to $2,625 per year for the first two years of study, and up to $4,000 per year for the remainder of undergraduate study. Graduate students may borrow up to $7,500 per year. The interest rate is eight percent, and repayment begins six months after the borrower ceases to be a student.

*Short-Term Emergency Loans*—Students may borrow up to $100 for unanticipated expenses which occur during the semester and up to $400 for tuition and book expenses. The loans have a $1 service charge, but no interest is charged. Loans must be repaid within 30 to 60 days. Funds for these loans are privately donated and include the following:

Alpha Delta Kappa, N.C. Alpha Chapter
Charlotte—North Rotary Club
R.P. Stephen Davis Memorial Fund
English Graduate Student Loan Funds
Housewares Club of the Carolinas
International Student Loan Fund
Kappa Alpha Psi Fraternity
Marlin McCasland Memorial Fund
Ada Pearson Fund
Schoenith Student Loan Fund
UNCC Women's Organization

### Grants

*Pell Grants*—These are for undergraduate students and can range from $150 to $2,100, based on the student's financial need, state residence and other costs of attendance. It is an entitlement program, meaning that any student who applies and is determined to be eligible will receive funds.

*Supplemental Educational Opportunity Grant*—These are for undergraduate students and range from $200 to about $800. Eligibility is based on financial need and is determined within the UNCC Financial Aid Office.

*North Carolina Minority Presence Grant Program*—Under the University of North Carolina Board of Governors general Minority Presence Grant Program, black students may be eligible for special financial assistance if they are residents of North Carolina, enrolled for at least three hours of degree-credit course work, and demonstrate financial need.

*UNCC Grants*—UNCC administers several other grant programs funded by the State of North Carolina and requires North Carolina residency for consideration. These are available to both graduate and undergraduate students who apply by the established priority date of April 15.

**Graduate Assistantships.** The University has a limited number of graduate assistantships in the fields of biology, business administration, chemistry, computer science, education, engineering, English, geography, history, mathematics, political sicence, psychology and sociology. Such financial support will be extended to other areas of study as rapidly as resources become available. Application for a graduate assistantship should be filed in writing with the appropriate department through the Admissions Office not later than the February preceding the fall semester for which the assistantship is desired.

**Graduate Fellowships.** The Microelectronics Center of North Carolina (MCNC) has allocated a limited number of $12,000 fellowships to UNCC for outstanding students in graduate programs relevant to microelectronics. Information about MCNC Fellowships is available from the Admissions Office.

**Employment.** The Office of Student Financial Aid assists students in locating work on campus. The University participates in the federal Work-Study Program and attempts to match students with jobs related to their academic interests. Graduate students as well as undergraduate students may request University employment. However, all graduate students seeking employment must have the approval of their department heads.

The Placement Office assists students in obtaining part-time, full-time or summer employment off campus and, whenever possible, endeavors to relate work experience to career objectives. Job listings and assistance are available in the Job Location and Development Office, Room 123, King Building. (See more detailed statement under *Placement,* page 19.)

**Education for the Vocationally Handicapped.** Students who have suffered a disability which renders them vocationally handicapped are eligible for aid provided by the North Carolina State Division of Vocational Rehabilitation. This aid takes the form of services which include vocational counseling and guidance and placement. Payment of expenses such as training, medical treatment, room and board, books, fees and tuition may be available. A vocational rehabilitation officer is available in Charlotte for interviewing applicants. Appointments may be made by contacting Vocational Rehabilitation Services located at 1928 E. Independence Blvd., 704/342-6218.

**Veterans Benefits.** The Office of the Registrar works with the Veterans Administration to assist in administering the various programs of benefit to veterans or eligible relatives of veterans. The veterans clerk in the Registrar's Office certifies enrollment and transmits necessary credentials and information to the proper Veterans Administrative Office.

Admission to The University should be obtained before the student makes application for veteran's benefits. Applicants must be accepted into a degree program to receive benefits.

In order to be eligible for the full monthly allowance under any of the above laws, an undergraduate student must be enrolled for 12 or more semester hours of work, while a graduate student must be enrolled for nine or more semester hours. Those enrolled for fewer semester hours than the limits stated above will be eligible for part-time compensation. Students are responsible for reporting any change in enrollment status to the veterans clerk in the Office of the Registrar.

**Children of Veterans.** The North Carolina Department of Veterans Affairs awards scholarships for the children of certain deceased or disabled veterans. Those awarded "full" scholarships are entitled to tuition, mandatory fees, board allowance and room allowance; those awarded "limited" scholarships are entitled to tuition and mandatory fees. All inquiries should be referred to the North Carolina Division of Veterans Affairs, 227 East Edenton St., Raleigh, North Carolina 27601, telephone 919/733-3851.

Before the time of registration, each eligible student who wishes to enter The University should: (1) apply for admission following University procedures, and (2) apply for a scholarship award to the North Carolina Department of Veterans Affairs.

**Scholarships**

UNCC offers a comprehensive undergraduate scholarships program. Some of these are awarded entirely on the basis of merit, but individual financial need is a consideration in the awarding of many of them. The University's major merit awards are the Alumni Scholarships, the Cameron Scholarships, the Colvard Scholarships and the Bonnie E. Cone Scholarships.

*The Alumni Scholarships for Merit,* awarded for the first time in 1978, will be awarded annually to continuing students of The University who have proven outstanding scholastic attainment, participated in University and/or community activities, and demonstrated campus leadership. The scholarships were established to recognize outstanding full-time students and to encourage their continuing involvement and interest in the activities of The University. Information concerning the scholarships will be distributed to each department and college within The University each year prior to the award and will contain material outlining application procedures for the scholarships.

*The C.C. Cameron Scholarships* established by First Union Corp., honors Mr. C.C. Cameron, who served as chairman of First Union and as chairman of the UNCC Board of Trustees.

The purpose of the Cameron Scholars program is to bring outstanding students to The University of North Carolina at Charlotte. Recipients will be selected on the basis of academic achievement, demonstrated leadership and service to others. Cameron Scholars will be provided financial assistance and work experiences which will encourage intellectual growth and stimulate the will to achieve full potential.

*The Colvard Scholarships for Merit* honor Dr. Dean Wallace Colvard, first chancellor of The University of North Carolina at Charlotte, and his wife, Martha, who were instrumental in founding Friends of UNCC. Dr. and Mrs. Colvard have personified the quest for excellence at UNCC.

The Colvard Scholarships for Merit will be awarded to applicants judged on the basis of their achievements in high school, college aptitude tests and their promise of making meaningful contributions to society. Their roles as leaders and their service to school and community will be weighed carefully.

*The Bonnie E. Cone Scholarships for Merit* have been endowed by Clara McKay (Mrs. Charles H.) Stone of Charlotte and other friends of Charlotte College. The scholarships honor Dr. Bonnie E. Cone, founder and developer of Charlotte College, upon which base The University of North Carolina at Charlotte grew.

The Bonnie E. Cone Scholarships for Merit are awarded annually to students having high moral character and proven scholastic attainment and whose further education at The University will, in the judgment of the scholarship committee, enhance the citizenship of the recipients and advance the service of The University of North Carolina at Charlotte as an institution of excellence. A student may be recommended by the high school principal or community college president to be eligible for this scholarship.

*The Cameron Morrison Scholarships,* first awarded in 1985, were established as a memorial to former Governor and Mrs. Cameron Morrison. The scholarships recognize those students who are public high school graduates from Mecklenburg and Richmond Counties who seek self-improvement and demonstrate initiative and ability. The awards also are based on financial need and 40 awards of $500 each are made annually. To receive consideration, students must complete the general University application for financial assistance. Continuing students with a 3.0 or higher cumulative grade point average and entering students ranking in the upper 10 percent of their high school graduating class will be given preference.

Detailed information about the Cameron, Colvard, Cone and Morrison Scholarships, minimum qualifications, selection processes and the amount of the stipends may be obtained from the Office of Student Financial Aid at UNCC.

In most cases, there is no special application for the scholarships which follow, and all aid applicants will be considered unless the scholarship is noted as an exception. Normally, those students with demonstrated need and a grade point average of 3.5 or better will be considered for scholarships.

# Scholarships

Betty Adkins Memorial Scholarship
**Air Force ROTC
**Alcoa Foundation
Allendale Services, Inc.
Alpha Chapter of Alpha Delta Kappa
Alpha Sigma Chapter of Delta Kappa Gamma
Altrusa Club of Charlotte
*Alumni Scholarships
American Business Women—Carolina Charter Chapter
American Business Women—Charlotte Heritage Chapter
American Business Women—Mecklenburg Chapter
American Business Women—Queen Charlotte Chapter
American Society for Metals
**American Society for Quality Control
American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.
Paul Anthony Memorial Scholarship
**Army ROTC
J. Murrey Atkins Scholarship
Brycie Baber Scholarships
Barnes and Noble Scholarship
Harold Crusius Bird Scholarship
Tom Black Memorial Scholarship
*Blair-Boone-Dudley Scholarships
R.G. Brice Scholarships
Burroughs Scholarship
*C.C. Cameron Scholarships
*Cannon Mills Company Scholarship
Cannon Scholarship for Nursing
Carrousel Award
Wayland Cato, Jr., Scholarship
Charlotte Association of Insurance Women
Charlotte Board of Realtors
Charlotte Business and Professional Women
Charlotte Civitan Club
**Charlotte Engineers Club Scholarship
**Charlotte Kiwanis Scholarships
Charlotte North Rotary Club Student Loan Fund
Charlotte Panhellenic Congress
Charlotte Rotary Club
Charlotte-Mecklenburg—NCEA
**Chick Fil-A of Southpark Scholarship in Philosophy
**Ruth C. Clarke Scholarships in Nursing
*Dean and Martha Colvard Scholarships
*Bonnie E. Cone Scholarships
Bonnie E. Cone by Altrusa Scholarship
**Creative Arts General Scholarship
**Creative Arts Music Scholarship
**Creative Arts String Scholarship
**Creative Arts Theatre Scholarship
Jim Crockett Memorial Loan
**Crowder Construction Scholarships
*Cunningham Brick Scholarship
**Sanford V. Davenport Scholarships
**DeLoitte Haskins & Sells Scholarship
Delta Delta Delta
Delta Kappa Gamma
**Duff-Norton Engineering
Duke Power Company Engineering Scholarships
**Engineering Students (Minority) National Fund
**English Graduate Loan Fund
Engraph, Inc.
**Ernst & Whinney Accounting Scholarship
Executive Women International
Henry B. Fowler Memorial
James Edward Fox Scholarship
John L. Fraley Scholarship
**French Scholarship
Garinger Scholarship
Otto L. Giersch Scholarship
**Joris E. Gilbos French Scholarship
**Joris E. Gilbos German Scholarship
Miley Columbus Glover Memorial
Nicholas T. Goudes Foreign Language Scholarship
Greek Ladies Philoptochos Society Scholarship
Bronna Watson Hackney Scholarship in Nursing
Harry P. Harding Scholarship
Charles R. and Ailene S. Harris Engineering Scholarships
Harris-Teeter Enterprise Scholarship
Harrison-Wright Scholarship
Henkel Corp., Foreign Languages Scholarships
International World Trade Scholarship
**Jefferson Pilot Foundation Scholarship
Jeld-Wen-Wenco Scholarship
E. Dunbar Jewell and Associates Scholarship
Junior Achievement
**Katapodis Award
**Kokenes Award
Lake Forest Garden Club
Lambda Chi Alpha's Witherspoon Scholarship in Religious Studies
John Paul Lucas, Jr., Scholarship
**LUWA Corporation Engineering Scholarship

*Require a special application.
**These scholarships are awarded on recommendation by committees in the academic departments and may require a special application.

**Pierre Macy Scholarship
William Hugh McEniry Memorial Award
McEwen Scholarships
*Mecklenburg County Medical Society
**Mecklenburg General Contractors Association Scholarship
Cal and Fay Mitchell Scholarship
Cameron Morrison Scholarships
**Mumaw Engineering
Mutual Savings and Loan of Charlotte, NC, Scholarship in Business Administration
Mary Margaret Myers Scholarship Fund
**National Association of Accountants—Herbert Conner Scholarship
National Gypsum Company—Gold Bond Building Products Division Scholarship
J. Henry Nichols Scholarship
**North Carolina Association of the American Institute of Certified Public Accountants Charlotte Chapter
North Carolina Association of Supervisors of Elections
North Carolina Sheriff's Association Scholar
Samuel Iredell Parker Scholarships
Artemis J. Paschal Scholarships
**Lynn Hauser Pearce Memorial Scholarships
J.N. Pease Associates Engineer Scholarships
**Peat, Marwick, Mitchell Accounting Scholarship
Piedmont Club Foundation
Piedmont-Carolinas Chapter of the Institute of Internal Auditors
**Pneumafil Engineering Scholarship
**Price Waterhouse Foundation
Cecil Prince Scholarship
Proctor Foundation Scholarship
**Professional Engineers Association—South Piedmont Chapter
**Professional Engineers—Ladies Auxiliary
**Provost-Firpo French Scholarship
Puette Scholarship
Quota Club of Charlotte
Ramseur Tutoring Fund
George A. Rawlings Scholarship
Refabco, Inc., Scholarship
**Ramsey Products Engineering Scholarship
**Rexham Corporation
Kathy Reynolds Scholarship in Athletics
Roger Reynolds Scholarship in Business
George H. Roberts
Ralph S. Robinson Family Scholarship
**Rodgers Builders, Inc., Scholarships
Edwin L. Rogers Scholarship in Economics
**Touche Ross and Company
**Oliver Rowe Scholarship
Servomation of Charlotte
Lonnie Sides Memorial
Sheldon P. Smith Scholarships
Sodyeco, Inc., Scholarship
**Southern Engineering Scholarship
**Spanish Scholarship
Joseph Carl Stepp Memorial
Jan Stewart Scholarship
Charles H. and Clara Stone Scholarship
C.M. and M.D. Suther Scholarship
A.K. Sutton Scholarships
*Tate-Culbertson Scholarships
Mr. and Mrs. J.R. Thompson
Travelers Insurance Scholar
UNCC Women's Organization
**Robert M. Wallace Award
Mary Margaret Walsh Scholarship
Lettie Pate Whitehead Scholarships
Earle Whitton Scholarship
Mr. and Mrs. J.L. Winningham
**B.W. Witherspoon Air Force ROTC Award
**B.W. Witherspoon Army ROTC Award
*Joe A. Witherspoon Scholarship
Daniel H. Wolfe Scholarship
Women's Allied Auxiliary of N.C. Motor Carriers
World Trade Scholarship
Zeta Tau Alpha Foundation
Zonta Club of Charlotte

*Require a special application.
**These scholarships are awarded on recommendation by committees in the academic departments and may require a special application.

# Academic Regulations and Degree Requirements

# Student Responsibility

Every student is responsible for the proper completion of his/her academic program, for familiarity with the *University Catalog,* for maintaining the grade average required and for meeting all other degree requirements. The adviser will counsel, but the final responsibility remains that of the student.

A student is required to have knowledge of and observe all regulations pertaining to campus life and student deportment. The University has enacted two codes of student responsibility: **The UNCC Code of Student Academic Integrity** and **The UNCC Code of Student Responsibility** which are summarized on pages 32-33. As students willingly accept the benefits of membership in the UNCC academic community, they acquire obligations to observe and uphold the priniciples and standards that define the terms of UNCC community cooperation and make those benefits possible.

Every student is responsible for maintaining communication with The University and keeping on file with the Registrar's Office at all times a current address, including zip code and telephone number.

Every student, while associated with The University, is expected to comport himself/herself in campus and community life in a manner that will reflect credit upon the student and The University.

# Academic Regulations

## ASSIGNMENT OF ACADEMIC ADVISERS

Each student entering a degree program at The University of North Carolina at Charlotte is assigned an academic adviser or advisory committee in his/her major field. Advisers are also provided for students who have not yet chosen a major field. The adviser assists the student to develop the plan of study best suited to his/her prior preparation and objectives. This assistance is not a substitute for the personal responsibility of the student described in the preceding section.

## CATALOG POLICIES

The *Catalog* is not an irrevocable contract. Regulations published in it are subject to change by The University at any time without notice. University regulations are policy statements to guide students, faculty and administrative officers in achieving the goals of the institution. Necessary interpretations of these policies will be made by the appropriate authorities with the interest of the students and the institution in mind. Students are encouraged to seek information as they require it about the application of any policy.

Each new edition of the catalog becomes effective at the opening of the fall semester following its publication. To receive a degree, an undergraduate student must complete satisfactorily all requirements described in the catalog in effect at the time of first enrollment as a degree student at The University or all requirements described in the catalog in effect at the time of graduation. A graduate student must complete satisfactorily all requirements described in the catalog in effect at the time of first enrollment as a degree student or all requirements described in the catalog in effect at the time of admission to degree candidacy. Any student who changes from one curriculum to another curriculum must meet catalog requirements of the new curriculum in effect at the time of the change. Any student who leaves The University or changes to another curriculum for a period of one calendar year or longer and then returns to The University or to the original curriculum will be required to meet catalog requirements in effect at the time of return.

Exceptions to these policies may be necessitated by changes in course offerings, degree programs or by action of authorities higher than The University. In that event, every effort will be made to avoid penalizing the student.

## REGISTRATION

The registration process takes place on designated days at the opening of each semester and each summer term prior to the beginning of classes. In addition, students who are already enrolled are given the opportunity to register in advance for the subsequent term during each regular semester. New undergraduate students who participate in one of the summer orientation and advising sessions are registered for the following fall semester during the session.

**Late Registration.** Late registration takes place on designated days after the beginning of classes each term. Except under special conditions, no student will be permitted to register after the last day of late registration as announced in the calendar for each semester and summer term. A late registration fee will be charged.

**Registration for Credit.** No credit will be awarded to a student for a course unless he/she is properly registered for it. Graduate credit will not be awarded unless the student is properly registered in a course which has been approved for graduate credit.

Any *new, continuing,* or *readmitted student* must have a registration form signed by his/her adviser/department to register. *Visiting* and *non-degree students* can be registered without adviser/departmental signatures, although they may consult with an adviser.

**All students, including visitors and non-degree students, are required to meet course prerequisites and to obtain the required permissions to enroll in courses indicated in the Schedule of Courses.**

**Adding or Dropping a Course.** In order to add or drop a course after the registration period, a student must secure written permisson from his/her adviser and complete the procedure as prescribed by the Registrar's Office. No student will be permitted to add a course or change sections of a course after the last day of late registration as announced in the calendar for each semester and summer term.

A student who drops a course after the last day to receive a refund and drop without evaluation will receive a grade of *W*. No student will be allowed to drop a course after the deadline for dropping a course as announced in the academic calendar for each semester or summer term unless there are extenuating circumstances and the drop is approved by the student's adviser and the dean of the college in which the student is a major. A student who is taking only one course must withdraw officially from The University if he/she drops the course.

**Withdrawal.** Any student voluntarily leaving The University before the close of the term must withdraw officially. A student initiates the withdrawal procedure and files the completed form at the Registrar's Office. A student who is unable to appear in person may notify the Registrar's Office of withdrawal by letter. A withdrawal is effective when the form or letter is received by the Registrar's Office. A student who withdraws from The University will receive the grade of *W* for all courses in progress. In order to return to The University, an undergraduate student must apply and be accepted for readmission unless the withdrawal occurred during a summer session in which case a readmission application is not required. Graduate students who return to The University within two years are not required to apply for readmission.

Any student who leaves The University before the close of a term without withdrawing officially will receive a failing or unsatisfactory grade (*F* for undergraduate credit and *U* for graduate credit) in each course for which he/she is registered. Enrollment will be terminated for any graduate student who receives a *U* and he/she will be required to reapply for admission.

Two weeks prior to the last day of class (or a proportionate period for summer school) is the last date withdrawal transactions are to be processed. (Students who withdraw after that date will receive a grade of *F* or *U*.) No student will be allowed to withdraw after the deadline unless there are extenuating circumstances and the drop is approved by the student's adviser and the dean of the college in which the student is a major.

**Dual Undergraduate/Graduate Registration.** Undergraduate students at UNCC who are required to take fewer than 12 semester hours of undergraduate work to fulfill all requirements for the bachelor's degree may be allowed during their final semester to enroll in certain courses for the purpose of obtaining graduate credit. Authorization for dual undergraduate/graduate registration may be obtained by submitting to the Dean of the Graduate School a Special Request Form approved by the student's undergraduate academic adviser, the instructor(s) of the graduate course(s), and the dean(s) of the college(s) offering the graduate course(s), accompanied by the regular

application for admission to graduate study and supporting credentials. The total hours to be carried in this status shall not exceed 12 hours, of which no more than nine may be for graduate credit. On the basis of work attempted prior to the final semester, such student must meet the grade point criteria for admission to a graduate degree program at The University. No course for which credit is applied to an undergraduate degree may receive graduate credit. Permission to take graduate courses under dual registration does not constitute admission to any graduate degree program at The University.

**Consortium Registration.** The Charlotte Area Education Consortium offers an inter-institutional registration during the fall and spring semesters for *undergraduate* students at the following institutions.

Barber-Scotia College
Belmont-Abbey College
Central Piedmont Community College
Davidson College
Gaston College
Johnson C. Smith University
Queens College
Sacred Heart College
UNCC
Wingate College
Winthrop College
York Technical College

Under this program, a full-time undergraduate student may take courses *not offered at UNCC* at one of the other participating institutions and have them appear on his/her transcript and be computed in his/her grade point average at UNCC. The registration process is initiated in the Registrar's Office and requires the approval of the student's academic adviser and college dean.

**Inter-Institutional Registration.** An inter-institutional registration program is available for a limited number of undergraduate and graduate students with the University of North Carolina at Greensboro, North Carolina State University, University of North Carolina at Chapel Hill and Duke University. The registration process is initiated in the Registrar's Office and requires the approval of the student's academic adviser and college dean.

**Auditors.** With the consent of the instructor, any person eligible for admission to The University as either an undergraduate or graduate student may register as an *auditor* for any class in which space is available. Fees and procedures are the same as those for a credit enrollment.

No student will be allowed to change audit/credit designation of a course after the first two weeks of a regular semester (or a proportional period for summer school).

The participation of auditors in class discussion and in tests or examinations is optional with the instructor. Auditors receive no University credit, but they are expected to attend class regularly. A formal record of the audit on the student's transcript is entered at the discretion of the instructor at the end of the course. The procedure for adding or dropping an audit course is the same as for credit enrollments.

## COURSE LOAD

A course load of 15 semester hours constitutes a normal full semester program for undergraduates, but a student may register for less work. A student enrolled in 12 or more semester hours is considered to be a full-time student by The University.

An appropriate course load is dependent on two factors: scholastic ability as reflected by the student's academic history and available study time. The latter is affected by such factors as employment, family responsibilities, and extracurricular activities. The student should understand that successful academic achievement requires significant amounts of time. In general, the student should expect to devote a *minimum* of two hours per week outside of class for each credit hour taken. For example, enrollment in 15 hours would require at least 30 hours of outside preparation per week. Many courses will require more than two hours of preparation. Generally, an undergraduate student should not register for more than 18 semester hours during a semester.

## CHANGE OF DEGREE OR MAJOR PROGRAM

An undergraduate student may change from one degree program or area of academic concentration to another when space is available provided he/she meets the prerequisites for admission to the new program and has appropriate written approval, a "Declaration of Program," filed at the Registrar's Office.

Declaration of Program forms will not be processed during the period from one week before advance registration through one week after advance registration.

## ATTENDANCE

The instructional work of The University is designed for class attendance, and it is assumed that students will be present. Students who miss classes will be responsible for the work of those periods. A missed test may cost the student the advantage of a grade to be counted toward the final estimate since instructors are not required to give make-up tests.

No undergraduate student may expect to receive a favorable evaluation unless he/she has attended at least 75 percent of the total class hours.

In the event of a conflict between class attendance and other scheduled University activities, class attendance takes precedence.

## GRADING POLICIES

**Grade Reports.** All students enrolled in The University receive reports of final grades from the Registrar after the close of each term. The reports are mailed to the student at the address designated by the student.

Special *reports of unsatisfactory achievement* are sent to the students concerned near the middle of each regular semester.

**Final Grade Changes.** When a grade of other than *Incomplete* is reported officially by an instructor at the end of a term, the grade is recorded by the Registrar and can be changed only if an error has been made in assigning or reporting the grade. When a grade is assigned consistent with University policy, only the instructor has the right to change a grade except as provided in the *Incomplete* grade policy. When an instructor reports a change for a grade other than *I,* the Change of Grade Form must be signed by his/her department chairperson and dean.

Students who think an error in grading has been made are advised to consult with the instructor as soon as the formal grade report is received. The erroneous grade must be reported to the instructor for correction during the next semester (fall or spring) in residence but no later than 12 months after the term in which the grade was assigned, whichever comes first.

**Credits.** The unit of measurement of University work is the *semester hour.* It ordinarily represents one lecture hour per week for one semester; however, a sequence of two or three laboratory hours is considered to be the equivalent of one lecture hour. Semester hours are also referred to as credit hours or credits.

**Grades.** Letters are used to designate the quality of work done. The University has separate grading systems for undergraduate and graduate students:

**Undergraduate Grades**

| Letter | Meaning | Grade Points Per Semester Hour |
|---|---|---|
| A | Excellent | 4 |
| B | Good | 3 |
| C | Fair | 2 |
| D | Passing | 1 |
| F | Failing | 0 |
| I | Incomplete | * |
| IP | In Progress | * |
| W | Withdrawal | * |
| AU | Audit | * |
| NR | No recognition given for audit | * |
| | **Cooperative Education** | |
| S | Satisfactory | * |
| U | Unsatisfactory | * |
| | **Pass/No Credit** | |
| H | Honors | * |
| P | Passing | * |
| N | No Credit | * |

**Graduate Grades**

| Letter | Meaning | Grade Points Per Semester Hour |
|---|---|---|
| A | Commendable | 4 |
| B | Satisfactory | 3 |
| C | Marginal | 2 |
| U | Unsatisfactory | 0 |
| I | Incomplete | * |
| IP | In Progress | * |
| W | Withdrew | * |
| P | Pass | * |
| N | No Credit | * |
| AU | Audit | * |
| NR | No recognition given for audit | * |

**Not used in computation of grade point average.*

**Credit by Examination.** No grade is assigned for credit earned by examination, but such credit is indicated on the student's transcript.

**Grade of *I*.** The grade of *I* is assigned *at the discretion of the instructor* when a student who is otherwise passing has not, due to circumstances beyond his/her control, completed all the work in the course. The missing work must be completed during the next semester (fall or spring) in residence, but no later than 12 months after the term in which the *I* was assigned, whichever comes first. If the *I* is not removed during the specified time, a grade of *F, U* or *N* as appropriate is automatically assigned. *The grade of I cannot be removed by enrolling again in the same course.*

**Grade of *W*.** No grade will be given for a course dropped on or before the last day to drop a course without record. After this period but before the last day to drop, a student who withdraws from a course will receive a grade of *W*. Courses given the grade of *W* do not count as hours attempted. Only students with such extenuating circumstances as serious illness will be permitted to drop after the last day to drop. Unsatisfactory academic performance itself is not an extenuating circumstance. The time of withdrawal is the time the drop card or withdrawal form is accepted by the Registrar's Office.

**Grade Point Average.** The grade point average for an **undergraduate student** is determined by multiplying the number of grade points for each grade by the number of semester hours credit received in that course and adding all accumulated grade points together, then dividing by the total number of semester hours the student has attempted, except those for which the student has received a grade of *I, W, H, P, AU,* or *N*. When a course is repeated, no additional credit hours attempted accrue, and the hours earned and grade points of the previous grade are replaced by those of the current grade. These regulations do not apply to those courses listed as "May be repeated for credit." In computing the grade point average, only those credits attempted at the campus of The University of North Carolina at Charlotte or through the Charlotte Area Educational Consortium are included.

**Repeating an Undergraduate Course.** Whenever a course is repeated by an *undergraduate student,* no additional hours attempted accrue, and the last grade replaces the previous grade in computing the grade point average and in the assignment of academic credit. However, all entries remain a part of the student's permanent academic record. A student who has received a grade of *C, H, P* or better in a course may repeat that course only with the prior approval of the student's adviser, department chairperson and dean. Repeating a course more than once to raise a grade requires prior approval of the student's adviser, department chairperson and dean. These regulations do not apply to courses that may be repeated for credit. Questions concerning this policy should be directed to the Registrar's Office.

**Pass/No Credit Option.** Every student will be permitted during his/her four *undergraduate* years to select a total of four courses in which he/she shall receive an evaluation of *H* (Honors), *P* (Pass), or *N* (No Credit). Only one such course will be selected during an academic year. Every course in The University is offered on this basis except when taken by a student for departmental credit toward his/her major or minor or to satisfy all University degree requirements. Although units completed with honors or pass will count toward graduation, they will not be considered in the computation of the grade point average.

This option is designed to encourage curiosity, exploration and experimentation in areas where a student has strong interest but little or no previous experience.

The student must declare his/her intention to take a *Pass/No Credit* option by the end of the drop/add period in the semester. **Note:** Courses designated by the faculty to be graded only on a *Pass/No Credit* basis are not counted as part of this option.

## TRANSCRIPTS OF RECORDS

Upon written request by the student, an official transcript of the academic record will be issued to the person or institution designated, provided that all the student's obligations to The University have been settled satisfactorily.

Each student is entitled to one transcript without cost, regardless of how early in his/her academic career the request may be made. A fee of $1 per copy should accompany subsequent requests.

Requests should reach the Registrar's Office at least one week before the date the transcript is needed.

## CLASSIFICATION OF UNDERGRADUATE STUDENTS

At the beginning of each semester, regular students working toward a bachelor's degree are classified on the basis of minimum earned semester hours as follows:

| Classification | Earned Semester Hours |
|---|---|
| Freshman | 1-23 |
| Sophomore | 24-51 |
| Junior | 52-89 |
| Senior | 90 or more |

## REQUIREMENTS FOR CONTINUED ENROLLMENT

**Undergraduate.** In order to remain in good standing, the student's cumulative grade point average at UNCC must be 2.00 or higher. The grade point deficit is the number of additional grade points required to increase the student's cumulative GPA to 2.00. A student with a grade point deficit between one and 13 will be placed on academic probation, and this will be noted on the student's grade report.

**A student will be suspended if the student:**

a. has a grade point deficit of 14 or more, or
b. has failed to achieve good standing after two successive semesters on probation (excluding summer sessions).

**No student shall be suspended at the end of the current semester if the student:**

a. was in good standing at the end of his/her most recent semester of a regular academic year at UNCC or
b. is in his/her first semester of enrollment at UNCC, or
c. has a 2.50 GPA for the current (excluding summer sessions) semester, or
d. is readmitted and was not enrolled at UNCC in the last two calendar years prior to the beginning of the current semester.

As a general rule, the summer session at The University of North Carolina at Charlotte shall be open to all students previously enrolled here, including students academically ineligible to continue during the regular academic year.

In computing the grade point average, only those credits attempted at the campus of The University of North Carolina at Charlotte or through the Charlotte Area Educational Consortium are included.

## REQUIREMENTS FOR READMISSION AFTER ACADEMIC SUSPENSION OR TERMINATION

No undergraduate student under suspension will be readmitted to The University if he/she does not completely satisfy the entrance requirements as stated elsewhere in this *Catalog*.

In addition, an undergraduate student who has been suspended by reason of failure to satisfy the requirements for continued enrollment as stated above will be ineligible for readmission until (1) the expiration of the next semester following his/her suspension (except that he/she will be permitted to enroll in the summer session); (2) he/she meets the requirements for continued enrollment; (3) he/she earns an associate of arts (AA) degree from an accredited two-year institution; or (4) the student elects to use the "two year rule". If readmitted, the student will be expected to satisfy the requirements for continued enrollment.

At the end of the semester in which the student fails to meet the requirements for continued enrollment for the second time, he/she will be suspended and may be readmitted only after meeting the requirements for continued enrollment.

The student has recourse for meeting the requirements for readmission by attending summer sessions at UNCC.

**Note: Readmission after suspension or after an incomplete semester, whether caused by withdrawal or suspension, is not automatic. A new application must be made and approval to return received.** Included in the approval must be an acceptance from the department in which the student would carry his/her major. (See pages 44-45, Readmission of Former Students.)

## TRANSFER CREDIT AND ADVANCED STANDING

Evaluation of transfer credits, advanced standing, CLEP, and APP are coordinated through the Admissions Office. Prospective students who desire further information about policies and procedures for awarding credit should communicate with the Director of Admissions.

UNCC will accept or transfer appropriate undergraduate credits earned through APP, CLEP, correspondence courses, extension courses, armed forces service schools, and college-level courses completed prior to graduation from high school. In addition, UNCC will accept or transfer appropriate undergraduate and graduate credits earned at another accredited institution or through credit by examination. Credit toward a degree is not awarded for Continuing Education Units (CEUs).

**Advanced Placement Course Credit (APP).** The University will accept appropriate undergraduate credits earned through Advanced Placement Program Tests completed prior to graduation from high school. Students must request that official Advanced Placement test results be sent directly to the Admissons Office for evaluation (UNCC code-5105). Prospective students who desire further information about policies and procedures for awarding credit should contact the Admissions Office, UNCC, Charlotte, NC 28223, (704) 547-2211.

**College Level Examination Program (CLEP) The General Examinations.** An undergraduate student may receive up to 32 semester hours of credit equivalent to the UNCC general degree requirements, with credit being awarded only for scores at the 50th percentile, or higher.

**The Subject Matter Examinations.** Credit may be awarded for subject matter examinations listed below at the levels recommended in the current edition of *CLEP Scores: Interpretation and Use:*

**Business**
Computers and Data Processing
Elem. Programming-Fortran IV
Intro. Business Management
Intro. Accounting
Intro. Business Law
Intro. Marketing

**Education**
Educational Psychology
Human Growth and Development

**Mathematics**
Calculus w/Anal. Geometry
College Algebra
College Algebra Trigonometry
Statistics
Trigonometry

**Nursing**
Anatomy
Physiology
Microbiology

**Sciences**
Biology
General Chemistry

**Foreign Languages**
College French I & II
College German I & II
College Spanish I & II

**Humanities**
American Literature
Anal. & Interp. of Literature
College Composition
English Literature
Freshman Literature

**Social Sciences**
Afro-American History
American Government
American History I & II
General Psychology
Intro. Macro-Micro Economics
Intro. Macroeconomics
Intro. Microeconomics
Intro. Sociology
Western Civilization I & II

Credit is *not* awarded for examinations in dental hygiene and medical technology.

The amount of CLEP credit which is applicable to a specific degree program is determined by the department offering the program.

**Transfer Credit from Other Institutions.** Transcripts are evaluated in the Admissions Office and the results are provided to the applicant and to the major department/college. Determining the

applicability of transferred credits to major or program requirements is the responsibility of the department chairperson or program director. General rules governing transfer credit:

1. To be considered for transfer credit, the courses must have been undertaken at a *regionally* accredited institution.
2. *Provisional* transfer credit may be granted for study at foreign institutions or U.S. institutions which are not regionally accredited, but must be validated by 30 semester hours of successful performance in residence at UNCC.
3. Courses in which credit is accepted must be appropriate for approved University programs and curricula in which the student is enrolled.

Additional requirements for *undergraduate* transfer credit:

4. No credit below *C* level will be accepted; grade points and averages do *not* transfer.

Additional requirements for *graduate* transfer credit:

5. The grade in any course accepted for transfer credit must be the equivalent of that awarded for commendable *(A)* or satisfactory *(B)* work as defined by UNCC.
6. At the time of admission up to six transfer hours credit may be accepted from another accredited institution upon approval of the student's adviser and the dean of his/her major college.
7. Courses accepted for transfer are subject to the same time limitation as courses taken in residence.

**Correspondence and Extension Courses.** A limited number of correspondence and/or extension courses may be transferred.

**Courses from Two-Year Institutions.** The University accepts a maximum of 64 hours from two-year institutions for undergraduate students.

**Transient Study.** Courses undertaken by UNCC students at other accredited institutions may be transferred to The University subject to the following regulations:

1. The University is not obligated to accept any credit from another institution unless the student has obtained the *prior approval* of the dean of the college in which he/she is enrolled. A Permit for Transient Study form should be completed and filed in the Registrar's Office.
2. No credit will be accepted below *C* level for undergraduate students or below *B* level for graduate students.
3. The student must request that an official transcript be mailed to the Registrar's Office upon completion of the course. A form for this purpose is available in the Registrar's Office.

**Credit by Examination.** A student currently enrolled at UNCC may pass a specially prepared challenge examination and receive credit for a University course without having to do the normal course work. The student contacts the chairperson of the department in which credit is sought to request administration of an examination. Since it may not be appropriate to award credit by examination for some courses, the decision to offer an examination is that of the department. If the chairperson authorizes an examination, the student is instructed to pay the fee for credit by examination (see page 54) and to bring the receipt of payment to the examination. Credit by examination will be indicated on the transcript, but no grade points will be awarded. Failure on such an examination will incur no grade point penalty. A department may allow a student to take examinations for courses not offered at UNCC, if it deems it appropriate to do so. No student may challenge a course for which either a passing or failing grade has been received at UNCC.

## APPLICATION FOR THE DEGREE

Each student should make application for his/her degree on a form obtained from the Registrar's Office no later than the filing date specified in the University calendar. The application must be accompanied by the appropriate filing fee in effect at the time of the application. Degrees are awarded at commencement exercises held at the end of the spring semester; however, the diploma and transcript will reflect the term in which all requirements were completed.

## TEACHER CERTIFICATION

Students having completed degree requirements and filed application for their degree, who wish certification as public school teachers must request such certification from the State Department of Public Instruction on a form obtained from the College of Education and Allied Professions. For assistance, please call AC 704/547-2539.

### SECOND DEGREE AND/OR MAJOR

**Second Baccalaureate Degree.** Students who have earned bachelor's degrees from UNCC or other accredited institutions may enroll in a program leading to a second degree at the same level provided (1) the major field selected is different from that of the first degree; (2) the degree sought is different from that of the first when that degree was granted by UNCC; and (3) the appropriate application for admission is filed and approved.

Students seeking a second baccalaureate degree must (1) complete a minimum of 24 semester hours beyond those applied to the first degree; (2) satisfy residency requirements if their first degree was not earned at UNCC; (3) fulfill all general degree requirements; (4) achieve a minimum grade point average of 2.00 on all work attempted toward the second degree and (5) satisfy all department and college requirements for the degree sought.

**Second Baccalaureate Degree.** Students who have earned a bachelor's degree from UNCC or are working on a bachelor's degree at UNCC may enroll in a program leading to a second major under the same degree provided (1) the second major field selected is different from the first; (2) the student meets the requirements for acceptance into the second major program; and (3) the appropriate application or "Declaration of Program" is filed and approved.

### APPEAL PROCEDURES

An undergraduate student or applicant may appeal decisions about admission or suspension by submitting a written statement to the Admissions Advisory committee in care of the Director of Enrollment Services.

Other grievances relating to academic status are to be addressed by the college where the grievance arises, or if no particular college is appropriate, by the Director of Enrollment Services. Written procedures are available from the dean of each college and the Director of Enrollment Services.

# Academic Honors

### CHANCELLOR'S LIST

The Chancellor's List is a record of all undergraduate students whose academic performance meets the specified criteria for special recognition from The University. In order to qualify for the Chancellor's List during the fall or spring semester, a full-time student must earn a grade point average of at least 3.80 in 12 or more semester hours of credit graded *A, B,* or *C* with no grade less than *C.* A part-time student must earn a combined fall and spring grade point average of at least 3.80 in 12 or more semester hours of credit graded *A, B,* or *C* with no grade less than *C.* To qualify for the Chancellor's List as a part-time student, a student must enroll on a part-time basis both fall and spring semesters. Students who receive the grade of *AU, H, P* or *HP* are not excluded from recognition as long as 12 hours are completed with *A, B,* or *C.* Students who receive the grade of *D, F, I, NR* or *N* are not eligible for recognition.

### DEAN'S LIST

The Dean's List is a record of all undergraduate students whose academic performance meets the specified criteria for special recognition from The University. In order to qualify for the Dean's List, a student must earn a grade point average of at least 3.40 and not more than 3.79 and meet all other criteria as described for the Chancellor's List.

### COMMENCEMENT MARSHALS

The juniors who have the highest scholastic averages among those enrolled full-time during the fall and spring semesters are honored by being named commencement marshals. The marshal who has the best academic record is designated chief marshal. For the purpose of this selection, The University considers as juniors those students who will have completed 89 hours of degree work at the end of the spring semester. Juniors who have not completed their last two semesters of work or their last 24 credit hours prior to the spring semester at The University of North Carolina at Charlotte shall not be considered as eligible to be marshals.

### GRADUATION WITH DISTINCTION

Each of the undergraduate degrees is awarded Summa Cum Laude when the graduating student's grade point average is 4.00, Magna Cum Laude when his/her grade point average is at least 3.80 but less than 4.00, and Cum Laude when his/her grade point average is 3.40 or more but less than 3.80.

To be eligible to graduate with distinction, a student must complete in residency at UNCC at least 48 hours used in computing the grade point average.

# Degree Requirements

### BACCALAUREATE DEGREE REQUIREMENTS

**Residence Requirements.** The minimum residence requirement for a bachelor's degree at The University of North Carolina at Charlotte is that a student must earn the last 30 semester hours of credit at The University. The last 12 semester hours of the work in his/her major field must be earned at The University. Exception to either of these hour provisions may be made upon the recommendation of the student's major department and with the approval of the dean of the college of the student's major.

Course work taken in residence shall be construed to mean work offered by The University of North Carolina at Charlotte and taken in courses on the Charlotte campus. Credit earned by challenge examinations cannot be used to meet the residence requirement.

**Grade Point Requirements.** In all courses attempted at The University, a minimum overall grade point average of 2.00 is required. In all courses in the major and in a minor, a minimum grade point average of 2.00 is required.

**Course Level Requirement.** Junior and senior students are required to have the consent of the major department to enroll in any course below the 3000 level not required in their degree program.

### GENERAL EDUCATION REQUIREMENTS FOR ALL BACCALAUREATE DEGREES

The following common core of general education requirements is designed to develop skills, competencies and learning capacities to achieve the Goals of UNCC Education. These requirements apply to all candidates for baccalaureate degrees who enter The University as:

- **freshman students** *after spring semester 1986.* (A new freshman student is an entering student for whom 23 or fewer semester credits from prior academic work have been accepted toward a UNCC degree.)
- **transfer students** *after spring semester 1988.* (A new transfer student is an entering student for whom more than 23 semester credits from prior academic work have been accepted toward a UNCC degree.) *Exceptions* are new transfer students admitted to the Bachelor of Engineering Technology (B.E.T.) programs and to the General Criminal Justice Concentration. These students will meet the requirements specified by their department.
- **readmitted students** *after spring semester 1988* if they have been away from The University for a period of 12 months or longer.

**All other students** admitted as freshmen prior to summer 1986 or as transfer students prior to summer 1988 *must meet these requirements or the appropriate course requirements for their degree* as specified on pages 77-79 in this *Catalog*.

Requests for exceptions to any aspects of these requirements for individual students will be approved by the Vice Chancellor for Academic Affairs in consultation with the Council on General Education. Such exceptions may be requested by completing the Special Request Form, including approvals by the student's adviser, chairperson and dean and submitting it to the Office of Academic Affairs.

## GOALS OF UNCC EDUCATION

UNCC graduates should be self-motivated individuals who are able to form, articulate, and act upon reasoned decisions in their personal, civic, and professional lives. To this end they should (a) have a broad knowledge base as well as a more specialized knowledge base in their chosen area, (b) possess skills and capacities that can be applied to a variety of situations and professions in an ever-changing world, (c) understand the complexities and interrelationships between humans and their environment, and (d) possess a realistic understanding of their own potentials, limitations, and mental/physical development. All UNCC graduates should possess a general understanding of and appreciation for science and technology; literature and the arts; the individual, society, and culture; and the interrelationships among these.

The Schedule of Courses, which is published prior to each registration, will contain an updated listing of courses that have been approved as satisfying specific Goals of UNCC Education.

In order to meet the Goals of UNCC Education, students engage in programs designed to develop understandings, skills, and capacities in the following six interrelated major areas:

### GOAL I. COMMUNICATION

*UNCC graduates should be able to:*

A. Effectively send and receive in English written and oral messages in different situations for a variety of audiences, purposes and subjects.
B. Communicate effectively in a symbolic system of language (other than English) having written, oral or visual components.

*Requirements/Approved Courses*

- English 1101 and 1102 (or transferred equivalent courses, or proficiency through English 1102 level demonstrated by testing).
- Writing Intensive (W) courses: six semester hours, including three semester hours at the 3000 level or above and at least three semester hours outside the student's major. Approved courses include:

  ENGL 2105, 2116, 2160
  THEA 2218, 2219
  BUSN 3160
  READ 3151
  EDUC 3152
  PHIL 2101 (sections designated W)
  POLS 1101, 1150 (sections designated W)
  PSYC 2120 (Fernald sections only)
  Other courses designated W.

- Foreign language proficiency through the 1202 course level. (Proficiency may be certified by completion of a 1202 course, or transfer of an equivalent course, or by satisfactory performance on a placement examination.)

  Students whose native language is not English may satisfy the foreign language requirement with English 1102.

### GOAL II. PROBLEM SOLVING

*UNCC graduates should possess the analytical abilities necessary to:*

A. Sense, discover and define problems.
B. Recognize and understand the use of qualitative and quantitative methods for solving problems and select those appropriate for specific problems.
C. Collect and order information.
D. See the relationships among phenomena.
E. Assess the probable implications of a solution.
F. Decide on an appropriate solution.
G. Evaluate the problem-solving process.

*Requirements/Approved Courses.* Problem solving is a goal of all courses taught in The University and it is integrated into all the other Goals of UNCC Education. Additional requirements:

- Analytical and quantitative approaches to problem solving (select one):

  1. Mathematics (six semester hours) **OR**
  2. Mathematics (three semester hours) and Logic—PHIL 2105 (three semester hours) **OR**
  3. Mathematics (three semester hours) and Computer Science 1100.

- Research methods and problem-solving course work appropriate to the major discipline or field study. (This course work is specified by the student's major department.)

**GOAL III. UNDERSTANDING VALUES**

*UNCC graduates should confront the dynamics of personal and community interrelationships by:*

A. Recognizing the assumptions, beliefs, and values underlying one's own conduct.
B. Recognizing the historical context and assessing the consistency of one's own values.
C. Recognizing differences in the assumptions, beliefs, and values underlying the conduct of others.
D. Recognizing the implications of decisions made on the basis of values.

*Requirements/Approved Courses.* Aspects of this goal are addressed by many courses throughout the curriculum and by extracurricular activities offered on and off campus. Specific academic requirements:

- Values (V) course: three semester hours. Approved courses include:

  ANTH 1101
  ESCI 2101
  HIST 1100 (formerly 1000), 2000
  PHIL 3221, 3228, 3231
  POLS 3101, 3115, 3137, 3171, 3173
  RELS 1101, 1110, 2101
  SOCY 1101, 2112, 2132
  Other courses designated V.

  (Some Values courses also are approved to satisfy other general education requirements.)

**GOAL IV. UNDERSTANDING SCIENCE AND TECHNOLOGY**

*UNCC graduates should:*

A. Be conversant with and have had experience in the aims, methods, and principles of scientific and technological endeavors.
B. Understand the nature and limitations of the world view given us by sciences.
C. Understand the effects of technology in shaping the physical and human environments.

*Requirements/Approved Courses:* (Laboratory science courses are indicated in the Schedule of Courses published for each semester and for the summer sessions.) Completion of *one* of the following options:

1. One Science (S) course with laboratory from three of the following five groups:

   Biology—BIOL 1110 or 2111
   Chemistry—CHEM 1101 + 1101L or 1103 + 1103L
   Earth Sciences—ESCI 1101 or 1102
   Physics, Astronomy—PHYS 1101, 1130 + 1130L or PHYS 2221 + 2221L
   Psychology, Physical Anthropology—ANTH 2141 or PSYC 1101 + 1101L
   Other courses designated S.

2. A two-semester sequence of Science (S) courses with laboratories from:

   BIOL 1110 and 1115
   BIOL 2111 and 2112
   CHEM 1101 + 1101L and 1102 + 1102L
   CHEM 1103 + 1103L and 1104 + 1104L
   ESCI 1102 and 3100
   PHYS 1101 and 1102
   PHYS 2221 + 2221L and 2231 + 2231L
   Other sequences designated S.

## GOAL V. UNDERSTANDING THE ARTS, LITERATURE, AND IDEAS

*UNCC graduates should:*

A. Be conversant with, and have had experience in, the aims and methods of the great intellectual, spiritual, literary, and artistic expressions that have shaped the development of the human imagination.
B. Understand the importance that abstract ideas and artistic images have in the process of self-understanding and in the shaping of society.

*Requirements/Approved Courses:*

- Literature or Ideas (L) courses: three semester hours. Approved courses include:

AMST 3100
ARSC 1701 (Honors)
ENGL 2100, 2101, 2102, 2103, 2104, 2105, 2111, 2112
GERM 3050
HIST 2200
PHIL 2101
RELS 1101, 2101, 2102
SPAN 2009
Other courses designated L.

- Arts and Ideas (A) courses: three semester hours. Approved courses include:

DANC 2110, 2111
ENGL 2106
FORL 3050
GERM 3030
HIST 3107
MUSC 1132
PHIL 3205, 3223, 3225
THEA 1101, 2101, 2102
Other courses designated A.

## GOAL VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY, AND CULTURE

*UNCC graduates should be able to:*

A. Understand how institutions operate with societies in both contemporary and historical perspectives.
B. Understand internal and external influences which promote and inhibit human action.
C. Understand the patterns of change which individuals experience at various points in life.
D. Recognize the complex, integrated, and dynamic nature of human behavior and human experience.
E. Understand the commonalities, differences, and interdependence among and within societies of the world.

*Requirements/Approved Courses:*

- Individual, Society and Culture (C) courses: six semester hours including at least three semester hours with a cross-cultural and/or international perspective (which are designated X). Approved courses include:

AMST 3100
CJUS 2100
ECON 2101, 2102
EDUC 2150
GEOG 3265
HIST 1160, 1161, 2111
PHIL 3226
POLS 1101
PSYC 1101
SOCY 1101, 2112, 2132
Other courses designated C.

*Cross-Cultural and/or International Emphasis* (X) *courses include:*

ANTH 1101
GEOG 1101
HIST 1100 (formerly 1000), 1120, 1121
POLS 1130, 1150
RELS 2102
Other courses designated X.

## LIST OF APPROVED COURSES

The complete list of courses (and sections, where appropriate) that satisfy the Goals of UNCC Education will be published in the Schedule of Courses each semester, with course descriptions and the following identifying symbols:

A Arts and Ideas
C Individual, Society and Culture
L Literature or Ideas
S Science and Technology
V Values
W Writing Intensive
X Cross-Cultural/International Perspective

A student may select from approved courses offered in any semester in residence; all Goals do not need to be met by courses offered at the time a student enters UNCC. A student may use a course to satisfy *only one Goal* even though the course qualifies to satisfy more than one Goal. The only *exceptions to this restriction* concern GOAL III (Values) and Writing Intensive (part of GOAL I). Courses approved to meet the Values or Writing Intensive requirements also can be used to satisfy another Goal at the same time (if the courses are approved to satisfy another Goal).

## COURSE REQUIREMENTS FOR SPECIFIC BACCALAUREATE DEGREES

These requirements apply to all candidates for baccalaureate degrees who do not choose to meet the "General Education Requirements for all Baccalaureate Degrees" specified on pages 73-77 of the *Catalog* and who entered The University as:

- freshman students before summer 1986.
- transfer students before summer 1988.
- readmitted students before summer 1988 or after summer 1988 if they were away from The University for less than 12 months.

Requirements are specified for each baccalaureate degree.

### Bachelor of Arts (BA) and Bachelor of Science (BS)

Minimum total semester hours required for graduation: 120

(BA degree with major in architecture requires 135 hours)

| *Subject* | *Semester Hours Required* |
|---|---|
| **English** | 6 |
| **Natural Science** (One year of a laboratory science—Anthropology 2141, Biology, Chemistry, Earth Science 1101, 1102, Physics, or Psychology 1101-1101L. Psychology 1101 may be offered as a natural science or as a social science but not as both.) | 8 |
| **Social Science** (to be selected from Anthropology, Criminal Justice, Economics, Geography, Political Science, Psychology or Sociology) | 6 |
| **Humanities** (to be selected from any courses that are not used to satisfy any other requirements for a degree and are offered by the programs and departments which follow: Afro-American and African Studies, American Studies, Communication Studies, English, Foreign Languages, History, Humanities, Philosophy, Performing Arts, Religious Studies and Visual Arts. A foreign language may be offered as a foreign language or as a humanity, but not as both.) | 6 |
| **Option of Mathematics or Foreign Language** | 6-8 |

**Mathematics Option.** Under the mathematics option a course in logic may be substituted for one course in mathematics.

**Foreign Language Option.** The student who selects the foreign language option is expected to achieve and demonstrate proficiency in a language other than English. Proficiency must at least equal that obtained by successful completion of 2202-level language courses.

A student who presents four high school units in the same foreign language will be presumed to have satisfied the foreign language option of the general degree requirements even though he/she receives no University credit in that language.

The student who presents two units in a given language for entrance and who, by placement test, is found capable of enrolling in the 2201 course in the same language, can satisfy the general degree requirement by successfully completing the 2201 and 2202 courses in that language.

The student who, on the basis of placement results, is advised to repeat the elementary course will receive credit for doing so. He or she may also choose to take an elementary course in another foreign language for elective credit.

A student admitted without foreign language units must take two elementary language courses for which he or she receives elective credit.

A student transferring to The University of North Carolina at Charlotte with two or more years of college work in an ancient or modern language not taught at The University, with a grade of at least *C* in each course, will be deemed to have fulfilled the foreign language requirement, provided he or she has completed satisfactorily two years of high school foreign language.

Students transferring from other colleges will take language placement tests in the language they intend to continue at The University, and they will be advised to register for the course for which they are best fitted, according to their placement test scores, for best results in their language sequence. They may not, however, receive credit again for courses the equivalent of which have already been accepted for transfer credit.

NOTE: For the number of hours and additional courses required for a specific major, see the requirements of that department in the section entitled Courses of Study and Special Programs.

**Bachelor of Architecture (BArch)**

The Bachelor of Architecture requires 30 semester hours of specified courses beyond the requirements for the Bachelor of Arts degree with a major in Architecture.

**Bachelor of Creative Arts (BCA)**

A minimum of 120 hours is required for graduation with a GPA of 2.5 or more in courses and individual projects in the major. Students must earn a *C* or better in all courses in the major. A *major in Performing Arts* (dance, music, or theatre) consists of area requirements of no more than 50 credit hours; English 1101-1102; and electives, 30 hours of which must be taken outside the Department of Performing Arts. All entering students must fulfill the general education requirements to achieve the Goals of UNCC Education. A *major in Visual Arts* consists of at least 60 hours in Visual Arts lecture and studio courses, 30 hours of related non-visual arts electives, ENGL 1101-1102 and 21 hours of individual projects.

**Baccalaureate Degrees in Engineering (BSCE, BSEE, BSME)***

| *Courses* | *Semester Hours* |
|---|---|
| English | 6 |
| Humanities and Social Science Electives | 12 |
| Economics | 3 |
| Mathematics | 17 |
| Physics | 10 |
| Chemistry | 4 |
| Science Elective | 3 |
| Freshman Engineering | 1 |
| Engineering Science | 3 |
| Department Requirements | 58 |
| Technical Electives | 12-15 |
| Total Number of Semester Hours Required | 132 |

***NOTE:** The courses required for a specific degree are described in the departmental section of this *Catalog* under Courses of Study and Special Programs. The science elective, the humanities and social science electives, and the technical electives will ordinarily consist of sequences of related courses and are subject to the prior approval of the College of Engineering.

**Bachelor of Engineering Technology (BET)**

Prerequisite courses for entering the Engineering Technology program normally taken at a technical institute or junior college are listed on pages 296 and 297.

| *Course* | *Semester Hours* |
|---|---|
| Chemistry 1101 (or other Natural Science) | 3* |
| Computer Science (CSCI) 1000 | 4 |
| Economics 2101 or 2102 | 3 |
| Humanities or Social Science electives | 12* |
| Free electives | 3 |
| Major electives | 6* |
| Engineering Analysis | 6* |
| Specified courses in major area of study | 23* |
| Total | 64 |
| Transfer credit for A.A.S. degree | 64 |
| Total Number of Semester Hours Required for B.E.T. Degree | 128 |

**Differences exist for CET and MET curricula.*

**Bachelor of Science in Nursing (BSN)**

A major in Nursing leading to the Bachelor of Science in Nursing degree requires 120 semester hours including the following:

| *Course* | *Semester Hours* |
|---|---|
| English | 6 |
| Humanities | 6 |
| Mathematics 1101 and 1222 | 6 |
| Biology 1110, 1259 and 1273 | 12 |
| Chemistry 1103 and 1104 | 8 |
| Psychology 1101 and 3151 | 6 |
| Sociology 1101 and Family | 6 |
| Nursing 1100 or equivalent | 3 |
| Nursing | 55 |
| Electives | 12 |
| Total Number of Semester Hours Required | 120 |

# Courses of Study And Special Programs

# Courses of Study

Following are descriptions of courses and programs offered by The University of North Carolina at Charlotte. Courses and degree programs are listed by college and department or academic area. Special programs and information about preparation for professional schools are listed in a separate section entitled Special Programs.

**COURSE DESCRIPTIONS.** Courses are listed with a subject prefix and course number, the title of the course, the semester hours credit given in parentheses, prerequisites or corequisites (if any), a description of the subject matter of the course, and an indication of when the course is usually offered *(Fall, Spring,* and/or *Summer)* in parentheses. Additional information may be given in parentheses following the course description: *(Evenings)* indicates courses that are offered in the evening *at least once during the two years of this Catalog; (Yearly)* indicates courses offered at least once a year; *(Alternate years)* indicates courses offered every other year; *(On demand)* indicates courses offered when there is sufficient demand. **The time that a course is offered is subject to change without prior notice.**

The course description may specify the number of class (lecture) and/or laboratory sessions and hours. If no class hours are given, the number of class hours per week is the same as the number of semester hours credit for the course.

**COURSE NUMBERING SYSTEM.** Courses are identified by four-digit numbers. (For reference purposes, course numbers used prior to 1985 are shown in parentheses in the left margin.) The first digit of the number generally identifies the level of the course; **1000-2999:** lower-division undergraduate; **3000-3999:** upper-division undergraduate; **4000-4999:** upper-division undergraduate and graduate; **5000-5999:** graduate and advanced undergraduate; **6000-7999:** graduate only. Additional work generally is required by graduate students in 4000-level courses. The following second digits designate special types of courses: 0 for topics, 4 for internships and practica, 5 for cooperative education, 6 for seminars, 7 for honors courses, 8 for independent study and 9 for research.

**Course Selection.** Although each student is responsible for the proper completion of his/her academic program, the student should consult with the assigned academic adviser or advisory committee in his/her major field. The adviser will assist the student to select courses within an approved program for study which will enable him/her to progress logically and successfully to the conclusion of the chosen degree program and to fulfill the requirements of both The University and the major department or professional sequence. Students intending to teach should consult faculty advisers in both the major department and the College of Education and Allied Professions.

**PLACEMENT EXAMINATIONS AND PROCEDURES.** Placement examinations are given at the beginning of each semester to assist students to determine the appropriate course for them in Freshman English (if they are international students), foreign language and mathematics.

**English Placement Procedures.** All incoming freshmen and transfer international students who are not native speakers of English (exceptions are students who have Bachelor's degrees from institutions in English-speaking countries) **must** take the UNCC English Placement Test to determine if special English-language instruction is needed. Those international students whose Placement Test scores fall below a level deemed appropriate for success in English 1101 (English Composition) must register for English 1100 (English for International Students) *at the beginning of their first semester at UNCC.* Those international students attempting to transfer English 1101/1102 credit(s) from another university or college must either demonstrate a working proficiency in academic English on the UNCC Placement Test or show successful completion of English 1100 *at UNCC* before the English transfer credit(s) will be accepted by The University.

**Foreign Language Placement Procedures.** Placement examinations in the foreign languages are given during the orientation period at the beginning of each fall and spring semester. They are open to any student who wishes to take an examination in a language he/she has studied for at least one year in high school.

**Mathematics Placement Procedures.** The UNCC Mathematics Placement Guide will be used to help students select the appropriate entry level mathematics course. A copy of the guide is included in the orientation packet for new freshman students.

# College of Architecture

*Dean:* Professor Hight
*Professors:* Anderson, Melaragno, Mitchell
*Professor Emeritus:* Langhorst
*Associate Professors:* Benzing, Gallis, MacLean, Morgan, Nelson, Sauda, Vollendorf
*Assistant Professors:* Dinsmore, Lambla, Ryan, Venn, Weiss
*Visiting Assistant Professor:* Standley
*Lecturer:* Bilger
*Part-time Lecturers:* Abernathy, Aveleyra, Preiss
*Distinguished Visiting Architects:* Campbell, Lautner, Liebman, Torre

**Purpose.** Our society's concern for environmental quality and realization that we live in a world of finite resources provides unprecedented opportunities for architects to engage in research and programming, as well as to plan and design our buildings, building complexes, cities and other elements of the built environment.

The College believes humane, economically sound and visually stimulating cities and buildings can only be obtained through sensitive, responsible and creative meshing of the physical, societal, psychological, ecological, technical and visual determinants of environmental planning and design.

Therefore, the College of Architecture seeks to cultivate a sense of inquiry within each student and develop the individual's techniques of problem identification and solving. As process and product are viewed as being equally important and interrelated, the COA believes students must possess verbal and visual communication skills for examining environmental issues, testing ideas and communicating with others, as well as becoming equally proficient at analysis and synthesis.

For students to receive individual attention, the student-faculty ratio is kept reasonably low, and the faculty is composed of persons with a broad range of knowledge, skills and philosophies. In addition to the full-time faculty, a number of local practitioners participate as part-time instructors and an extensive distinguished visiting lecture-design critic program has been established.

Located in the major, most rapidly growing metropolitan area of the Carolinas, the College is able to incorporate community assistance projects into the educational program. Also, students may observe major buildings under construction, evaluate recently completed building complexes and examine the urbanization phenomena.

**Program.** The program is organized into a four-year segment (Bachelor of Arts degree in Architecture), followed by a one-year segment (Bachelor of Architecture degree).

**Bachelor of Arts in Architecture.** This four-year program requires 135 hours including 48 hours architectural studio, 34 hours of other architectural courses, and 53 hours of general and elective courses. It is structured into the Architectural Foundation Program (first and second years), and the Architectural Development Program (third and fourth years). The Foundation Program provides the information and skills required of all persons involved in the planning and design of our physical environment. The Development Program provides students with educational alternatives, i.e., they may select from a series of different studio/seminar and lecture/seminar experience.

The intention is to provide an educational milieu so that graduates will possess the following knowledge, abilities and attitudes:

1. Identify environmental problems and their boundaries including user's needs, values, priorities and resources.
2. Discriminate what is, and what is not, relevant as well as learn to organize the collected information into a useful format.
3. Demonstrate capacity to abstract ideas and concepts, apply the gained knowledge to different situations, and generate design alternatives.
4. Develop visual simulation techniques in order to evaluate alternatives, predict consequences and communicate with others.
5. Understand humanistic (social, psychological, physical) needs and values, and their relationships with the built environment.
6. Creatively perform systematic and intuitive analysis and synthesis of design problems, including examining the what, where, why and how of a problem.

7. Understand the qualitative and basic quantitative characteristics of building systems and their relationship to space-movement organizations.
8. Establish a strong sense of self-discovery and expression, as well as an attitude of participating in establishing society's priorities.

Graduates of the B.A. in Architecture program are eligible for consideration into the fifth year program, or they may pursue graduate study in related fields such as planning, urban design and landscape architecture.

*B.A. in Architecture Academic Standards:* One grade of *D* in a studio is permissable. Any grade of *D* in a subsequent studio will require repeating the course. Any student receiving less than a grade of *C* when repeating a studio course will be expelled from the COA. To graduate, an overall grade point average of 2.0 must be achieved in all courses offered by the College.

**Bachelor of Architecture.** Admission requires an architectural or environmental related degree and acceptance into the College. The program requires 30 semester credit hours, including 14 hours of architectural studio, ten hours of other architectural courses and six hours of general studies.

The College seeks its Bachelor of Architecture graduates to possess the following attributes:

1. Greater understanding, knowledge and skills.
2. Ability to investigate and understand selected architectural issues.
3. General understanding of architectural practice, including its present and projected developments.
4. Possession of a rather in-depth understanding of an architectural subject through elective course study and its integration with the studio experience which emphasizes self-direction.

*Bachelor of Architecture Academic Standards:* A grade of *C* is the minimum passing grade in studio. Any student receiving less than a grade of *C* when repeating a studio course will be expelled from the COA. To graduate, an overall grade point average of 2.50 must be achieved in all the Bachelor of Architecture courses offered by the College.

So that students receive a general and comprehensive architectural education, the following discrete, but related teaching-learning experiences are provided.

*The Architectural Studio/Seminar:* Providing both analytical and synthetic experiences and the opportunity to pursue intense study of physical-environmental related subject(s), these courses link the humanistic, physical phenomena, social-psychological, behavioral and perceptional studies.

*The Architectural Technology Courses:* These provide a basic quantitative and qualitative behavioral understanding of structural and environmental control systems.

*The Architectural Lecture/Seminar Electives:* Through these courses students will be able to develop a comprehensive understanding of an architectural subject(s).

*The Architectural History Lectures.* Their purpose is to develop an understanding of the relationships between culture and their physical manifestations.

*Independent Studies:* When appropriate, a student may pursue a self-directed, faculty approved study, of a particular and significant architectural topic or subject.

*General University Requirements and Directed Electives:* Selection of courses to meet The University's general education requirements and elective studies occur in accordance with a student-selected, faculty-approved plan of study.

*The Faculty Advisory Program:* Major emphasis is given to a system of faculty advising so that there occurs an orchestration of architectural courses with general required and electives courses in accordance with a student's educational objectives.

*Dual Degree/Major Option:* It is possible for students to pursue a double degree or major program after the freshman year. Thus, in addition to architecture, a student may pursue a major study in a selected discipline such as history, engineering, business management, social sciences, etc. Any arrangement must meet The University's and College's requirements, as well as be structured in consultation with a faculty adviser and approved by the Dean.

*Study Abroad Program.* Arrangements have been made for students to study architecture for one or two semesters with the University of Copenhagen in Denmark and receive college credit.

## THE FOUNDATION PROGRAM

### First Year

| | | | |
|---|---|---|---|
| ARCH 1101 | 7 | ARCH 1102 | 7 |
| English 1101 | 3 | ARCH 1104 | 1 |
| Physics 1101 | 4 | English 1102 | 3 |
| Mathematics 1120 | 3 | Earth Sciences 2101 | 3 |
| | | Mathematics Elective | 3* |
| | 17 | | 17 |

### Second Year

| | | | |
|---|---|---|---|
| ARCH 2101 | 7 | ARCH 2102 | 7 |
| ARCH 2111 | 3 | ARCH 2112 | 3 |
| Natural Science Elective | 4* | Social Science Elective | 3* |
| General Elective | 3* | General Elective | 3* |
| | 17 | | 16 |

## THE ARCHITECTURAL DEVELOPMENT PROGRAM

### Third Year

| | | | |
|---|---|---|---|
| ARCH 3101 | 5 | ARCH 3102 | 5 |
| ARCH 3111 | 3 | ARCH 3142 | 3 |
| ARCH 3141 | 3 | ARCH Elective | 3* |
| ARCH Elective | 3* | General Elective | 3* |
| General Elective | 3* | General Elective | 3* |
| | 17 | | 17 |

### Fourth Year

| | | | |
|---|---|---|---|
| ARCH 3103 | 5 | ARCH 3104 | 5 |
| ARCH 3143 | 3 | ARCH 3144 | 3 |
| ARCH Elective | 3* | ARCH Elective | 3* |
| General Elective | 3* | General Elective | 3* |
| General Elective | 3* | General Elective | 3* |
| | 17 | | 17 |

*B.A. in Architecture:* 135 hours

## ARCHITECTURAL ADVANCED PROGRAM

| | | | |
|---|---|---|---|
| ARCH 5101 | 7 | ARCH 5102 | 7 |
| ARCH 5111 | 2 | ARCH 5112 | 2 |
| ARCH 5615 | 3 | ARCH 5616 | 3 |
| General Elective | 3 | Philosophy 3225 | 3 |
| | 15 | | 15 |

**Courses to be selected in accordance with program of studies developed with and approved by the faculty adviser.*

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

### BACHELOR OF ARTS IN ARCHITECTURE (ARCH)

**Studio Courses**

(101) **ARCH 1101. Comprehensive Studio. (7)** 7 credit hours/15 contact hours. Prerequisite: major in Architecture or consent of the Dean. Network of lectures, seminars and laboratories dealing with visual ordering systems, environmental design issues and creative problem identification-solving process, as well as visual and verbal communication skills for development. *(Fall)*

(102) **ARCH 1102. Comprehensive Studio. (7)** 7 credit hours/15 contact hours. Prerequisite: major in Architecture or consent of the Dean, and ARCH 1101. Similar to 1101 but with emphasis upon examination of structural and other geophysical qualitative characteristics and their relationship with formal-spatial-movement organization. *(Spring)*

(104) **ARCH 1104. Professional Options and Development. (1)** 1 credit hour/1 contact hour. Examination of major architectural movements, career options and opportunities, discussions of personal goal setting, and counseling on establishing each student's program of study. *(Spring)*

(201) **ARCH 2101. Comprehensive Studio. (7)** 7 credit hours/15 contact hours. Prerequisites: major in Architecture, ARCH 1102, 1104. Network of lectures, seminars and laboratories with emphasis upon the human needs (sociological, psychological and physiological) and values, and their relationships with spatial and form organization and design. Student exposed to several programming design methodologies and examination of historical precedents. *(Fall)*

(202) **ARCH 2102. Comprehensive Studio. (7)** 7 credit hours/15 contact hours. Prerequisites: major in Architecture, ARCH 2101. Similar to ARCH 2101 with inclusion of structural/geophysical studies, as well as continued development of the student's ability to collect, organize and analyze information, abstract ideas, and commence synthesis. *(Spring)*

(301) **ARCH 3101. Architectural Studio. (5)** 5 credit hours/9 contact hours. Prerequisites: major in Architecture, ARCH 2102.* Series of studio sections offered with different emphasis and subject concentration so students may receive a variety of studio experiences or pursue an area of study. Student may take one instructor for no more than two of the four studios. Section emphasis announced by time of academic registration. *(Fall)*

(302) **ARCH 3102. Architectural Studio. (5)** 5 credit hours/9 contact hours. Prerequisites: major in Architecture, ARCH 3101.* *(Spring)*

(401) **ARCH 3103. Architectural Studio. (5)** 5 credit hours/9 contact hours. Prerequisites: major in Architecture, ARCH 3102.* *(Fall)*

(402) **ARCH 3104. Architectural Studio. (5)** 5 credit hours/9 contact hours. Prerequisites: major in Architecture, ARCH 3103.* *(Spring)*

**Architectural History Courses**

(211) **ARCH 2111. Ancient Architecture. (3)** 3 credit hours/3 contact hours. Study of ancient architecture and communities with emphasis upon the built environment as a cultural, political, religious, economical and visual expression. *(Fall)*

(212) **ARCH 2112. Medieval/Renaissance Architecture. (3)** 3 credit hours/3 contact hours. Prerequisite: ARCH 2111. Medieval and renaissance architecture and communities; emphasis on the built environment as a cultural, economical, political, religious and visual expression. *(Spring)*

(311) **ARCH 3111. Eighteenth to Twentieth-Century Architecture. (3)** 3 credit hours/3 contact hours. Prerequisite: ARCH 2112. Study of theoretical, technical and cultural background of architecture and planning from the middle of the 18th century through the mid-20th century. Emphasis upon development of ideas as they relate to architectural theories of the 20th century. *(Fall)*

**Building Systems Courses**

(321) **ARCH 3141. Building Systems One. (3)** 3 credit hours/3 contact hours. Prerequisites: MATH 1120, PHYS 1101. Basic quantitative study of structural and material behavior, as well as continued study of qualitative behavior initiated in the Foundation Program studios. *(Fall)*

**Some studios will be limited to only third- or fourth-year students, while others are open to all students.*

(322) **ARCH 3142. Building Systems Two. (3)** 3 credit hours/3 contact hours. Prerequisite: ARCH 3141. Continuation of ARCH 3141. *(Spring)*

(421) **ARCH 3143. Building Systems Three. (3)** 3 credit hours/3 contact hours. Prerequisite: PHYS 1101. Basic quantitative studies of HVAC, electrical, plumbing and lighting systems, as well as continued qualitative studies initiated in the Foundation Program studios and relationship of these systems with structural alternatives. May be taken along with ARCH 3141. *(Fall)*

(422) **ARCH 3144. Building Systems Four. (3)** 3 credit hours/3 contact hours. Prerequisite: ARCH 3141. Continuation of ARCH 3143. *(Spring)*

**General Architectural Courses**

(350) **ARCH 3050. Architectural Elective Studios. (3)** 3 credit hours; contact hours to depend upon the nature of the course. Prerequisite: ARCH 2102. Series of lecture/seminar/laboratory courses which include concentrated, in-depth study of selected environmental design/planning subjects. Specific subjects to be announced by time of academic registration. *(Fall, Spring)*

(390) **ARC 3890. Directed Independent Study. (1-3)** Prerequisite: major in Architecture. This course is designed to allow students to pursue faculty-directed independent study topics not provided by other College offerings. May be repeated for credit with the approval of the College. May not be taken in conjunction with ARCH 5101 and ARCH 5102. *(Fall, Spring)*

## BACHELOR OF ARCHITECTURE

(501) **ARCH 5101. Comprehensive Studio. (7)** 7 credit hours/15 contact hours. A faculty-directed studio of primarily short-term exercises in sketch mode, resulting in group reviews and related seminars. In addition to the primary issue of creative architectural design, exercises will also address environmental analysis and problem formulation. Final weeks devoted to definitive development of a student-selected design from among the foregoing exercises. *(Fall)*

(502) **ARCH 5102. Thesis Studio. (7)** 7 credit hours/15 contact hours. Prerequisites: ARCH 5101, 5111 and 5615 with grades of *C* or better. Corequisites: ARCH 5112 and 5616. Execution of thesis project proposed by the student and accepted by the faculty for ARCH 5111. *(Fall)*

(511) **ARCH 5111. Thesis Proposal. (2)** 2 credit hours/2 contact hours. Corequisite: ARCH 5615. A proposal to initiate a thesis project, approval of which is required for admission to ARCH 5102. A Thesis Advisory Committee of three, consisting of one COA undergraduate faculty, one fifth-year faculty, and one from outside, will advise the student in both preparation of the thesis proposal (ARCH 5111) and the thesis (ARCH 5102). *(Fall)*

(512) **ARCH 5112. Architectural Practice. (2)** 2 credit hours/2 contact hours. Corequisites: ARCH 5102 and 5616. Learning objectives include an understanding of the practice of architecture today, its responsibilities and procedures, and emerging alternative forms of practice and roles of the architect. *(Fall)*

(515) **ARCH 5615. Architectural Seminar. (3)** 3 credit hours/3 contact hours. Corequisites: ARCH 5101 and 5111. Understanding the whole decision-making realm of which architecture is but a part and how creative decisions are made. Integrated with studio exercise application, seminars will address, at all issue levels, the establishment of priorities for design and evaluation. A working and theoretical understanding of the interface of the designer's personal attitudes and the context of a specific project in establishing priorities is a major learning objective. *(Fall)*

(516) **ARCH 5616. Architectural Seminar. (3)** 3 credit hours/3 contact hours. Corequisites: ARCH 5102 and 5112. This seminar serves the needs of ARCH 5102 in design response to the issues addressed in ARCH 5111 and ARCH 5615, and has the following learning objectives: (1) understand the purpose, creation and maintenance of laws governing buildings; (2) refine skills in public presentation and discussion; (3) refine the ability to perceive the issues inherent in the work of others and to respond with meaningful criticism; (4) deepen the understanding of the systems of building. *(Spring)*

# College of Arts and Sciences

*Dean:* Professor Lyons
*Associate Dean:* Professor Perzel

**Objectives.** The primary mission of the 17 departments and five programs that comprise the College of Arts and Sciences is to provide quality programs in the arts and sciences and effective teaching at the undergraduate and graduate levels. Specific goals of the College are to have all graduates: write and speak English in an effective and competent manner; communicate effectively in a symbolic system or language other than English; possess analytical and problem-solving abilities; and appreciate one's values, science and technology, arts, and individual and societal behavior. Although faculty within the College are committed to strong departmental-based programs, increased emphasis is being placed on providing strong interdisciplinary programs. The College also strives to promote intercultural understanding through its curriculum, travel opportunities, student exchanges, and use of outside speakers.

The faculty in the College strongly endorse the proposition that the liberal arts are the core of The University's educational program, not only for students majoring in Arts and Sciences but also for students majoring in professional degree programs. As a result, courses offered within the College of Arts and Sciences are frequently those designated as meeting the general education requirements (see pages 73-77, Goals of UNCC Education).

**Purpose.** The College of Arts and Sciences comprises the Departments of Afro-American and African Studies, Biology, Chemistry, Criminal Justice, English, Foreign Languages, Geography and Earth Sciences, History, Mathematics, Performing Arts, Philosophy, Physics, Political Science, Psychology, Religious Studies, Sociology and Anthropology, and Visual Arts. The interdisciplinary programs of American Studies, Gerontology, Interdisciplinary Honors, and Women's Studies are presented in the section "Interdisciplinary Studies" which follows the Visual Arts Department in this *Catalog*. The Communication Studies minor and the International Studies minor (which is administered by the Center for International Studies) also are included in this section of the *Catalog*.

Baccalaureate degrees are offered in all departments, and minors are available in the following programs: American Studies, Anthropology, Biology, Communication Studies, Criminal Justice, Dance, Earth Sciences, French, Geography, German, Gerontology, History, Mathematics, Music, Philosophy, Physics, Political Science, Psychology, Religious Studies, Sociology, Spanish, Theatre, and Women's Studies. Medical technology options are available in Biology and Chemistry.

The following graduate degrees are offered by the College of Arts and Sciences: Master of Arts degree with majors in Biology, English, Geography, History, Mathematics, Mathematics Education, Psychology, and Sociology; Master of Science degree with majors in Biology, Chemistry, and Criminal Justice; and Master of Public Administration.

**Advising of Undecided Majors.** The College of Arts and Sciences serves as the advising center for students who have not selected a major when admitted to The University. This includes students who have not yet determined their career goals as well as those students who do not meet requirements for admission into other colleges within The University.

Since all students entering The University must meet the same general education requirements regardless of major, it is appropriate to concentrate on the completion of those requirements before committing to a specific major. Undecided students have time to try courses in several disciplines, which allows them to make a more informed judgment about future career decisions. Advisers come from many disciplines, have a broad working experience with the requirements for majors, and offer assistance and support as these students search for the education best suited to their individual needs.

**Service-Learning Internships.** Students may participate in internship experiences designed specifically to serve the needs of the community while providing learning opportunities for students.

The *Internship Program in Community Education and Services* is designed as an area-wide program with academic credit. The overall objectives of the service-learning program are:

—To identify relationships between the student's academic program and the problems and prospects of modern urban communities.

—To enable students to become involved in solving problems of the urban community.

—To provide manpower for governmental and service agencies in local metropolitan communities.

—To encourage youth to consider careers and/or citizen leadership in urban administration and service.

—To establish a closer relationship between institutions of higher education and the Charlotte area communities by making the resources of The University more accessible to the community and by providing a basis for keeping curriculum, teaching and research relevant to the needs of the community and society.

Interns may receive from one to 15 semester hours credit, with grading on a *Pass/No Credit* basis, for successful completion of ARSC 3400 (Non-Residential Studies). For additional information about this opportunity, contact the Office of the Dean of the College of Arts and Sciences.

## COURSE DESCRIPTIONS

### ARTS AND SCIENCES (ARSC)

(350) **ARSC 3000. Topics in Arts and Sciences. (3)** Prerequisites: junior standing and consent of the sponsoring departments. Topics chosen from the general area of the arts and sciences in order to demonstrate relationships and interdisciplinary influences. May be repeated for credit as topics vary with consent of the student's major department. Can be used toward general degree requirements as indicated each time the course is offered. *(On demand)*

(450) **ARSC 3400. Non-Residential Studies. (1-15)** Experience outside The University arranged cooperatively by the student and the major department for the purpose of applying, extending, adding to, or elaborating the student's studies in the major; or the service learning summer internship program. All arrangements for a non-residential study must be approved in advance. Arrangements include a written proposal of goals, methods, duration, hours credit, and evaluation procedures. Student projects in the department based non-residential studies will be developed, approved, supervised, and evaluated by the student's major department (in cooperation with others, if appropriate). The service learning summer internship program will be supervised by faculty appointed by the Dean of the College. Grading may be on a *Pass/No Credit* basis. Ordinarily to be taken no earlier than the junior year. No more than 15 hours of Non-Residential Studies may be presented toward a degree. (Cannot be used toward general degree requirements.) *(On demand)*

# Department of Afro-American and African Studies

*Chairperson:* Professor Azevedo
*Frank Porter Graham Professor:* Maxwell
*Assistant Professor:* Davidson
*Lecturers:* Davis, McCullough

The Afro-American and African Studies program addresses itself to the experience of peoples of African descent on the continent of Africa and in the diaspora, particularly in the United States. It provides a coherent focus on the history, economy, politics, literature, religion, and culture of black people throughout the world and their interaction with the rest of humankind. Its interdisciplinary approach, drawing from the experience of faculty trained in the areas of Afro-American and African Studies, presents a stimulating diversity of perspectives integrated into a totality not available in other disciplines, programs or departments. The curriculum is designed to provide a useful educational experience and academic skills for students who wish to consider graduate study or professional school and pursue careers in community development agencies; federal, state and city civil service; business; museums and archives; and diplomatic or foreign service; as well as research, journalism, international organizations, and teaching.

The goals of the Department of Afro-American and African Studies are:

1. To provide and preserve knowledge with purpose and direction about the aggregate experience of peoples of African descent by offering a Bachelor of Arts degree in Afro-American and African Studies and courses in the field to the University community and the public at large.
2. To foster intercultural understanding, expose and correct biased scholarship, dispel myths and stereotypes through course content, programs, exchanges and cultural interaction.
3. To provide a cultural background (through courses, advising, and other meaningful activities) that is supportive to students, particularly Afro-American students, in moving toward personal growth and self-awareness.
4. To provide general and specific academic skills to majors and non-majors through courses and activities that promote research, writing, reading and effective communication.
5. To promote an Afro-American and African perspective that will foster a political consciousness about the common bond uniting blacks in the diaspora and the African continent.
6. To prepare and assist students for career choices in life and graduate and professional schools through exposure to relevant experiences, courses and the demands of the working world.
7. To establish and maintain the Department's interdisciplinary and intercultural nature through cooperative arrangements with other academic departments and civic and cultural institutions.
8. To generate new knowledge and paradigms about the Afro-American and African experience through research and publication and constant communication with similar programs.
9. To promote faculty development by providing required financial means, time, resources and proper environment to accomplish this end.

**Study Abroad.** Students may have an opportunity to travel, work and study abroad in an exchange program through an African university, the Peace Corps, Operation Crossroads and Vista.

## BACHELOR OF ARTS

Students interested in the Afro-American and African Studies major leading to a B.A. degree are required to complete a minimum of 30 credit hours in the area of Afro-American and African Studies, including AAAS 1101, 1102, 1103, 1104, 2203, 2204, 2205, 3290, 3601 and 3990. Students are strongly encouraged also to take AAAS 2201 and 2206. In order to acquire experiences to enhance their career choices, students majoring in Afro-American and African Studies are recommended to pursue a double major in related areas such as history, political science, sociology, religious studies, anthropology and psychology. Furthermore, students have the option to concentrate either in the Afro-American or the African dimension of the program.

The required junior research mthods and senior seminar courses introduce students to research methodology and an in-depth probe into the themes and theories of Afro-American and African Studies. During the senior year, with the instructor's assistance, students design and work on a major project known as Project Demonstrating Excellence (PDE). Using library, archival or community resources, students demonstrate practical mastery and synthesis of the skills and knowledge acquired through the major courses of study.

Senior projects may require student involvement in community agencies such as the Afro-American Cultural Center, the Greenville Center, the Mechanics & Farmers Bank, the Metrolina Association for the Blind, Planned Parenthood, and the *Charlotte Post*.

## CURRICULUM OUTLINE FOR THE AFRO-AMERICAN AND AFRICAN STUDIES MAJOR LEADING TO THE B.A. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| AAAS 1101 | 3 | AAAS 1102 | 3 |
| AAAS 1103 | 3 | AAAS 1104 | 3 |
| English 1101 | 3 | English 1102 | 3 |
| Foreign Language Proficiency | 4 | Foreign Language Proficiency | 4 |
| Mathematics | 3 | Mathematics or Computer Science 1100 or Philosophy 2105 | 3 |
| | 16 | | 16 |

### Sophomore Year

| | | | |
|---|---|---|---|
| AAAS 2201 | 3 | AAAS 2204 | 3 |
| AAAS 2203 | 3 | AAAS 2206 | 3 |
| AAAS 2205 | 3 | Related Work | 3 |
| GOAL IV | 4 | GOAL IV | 4 |
| GOAL I: (W) course outside major | 3 | Elective | 3 |
| | 16 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| AAAS 3290 | 3 | Arts & Sciences Non-Residential Studies | 2-16 |
| GOAL V: (L) | 3 | | |
| Other GOALS as needed | 3 | | |
| Electives | 6 | | |
| | 15 | | 16 |

### Senior Year

| | | | |
|---|---|---|---|
| AAAS 3601 | 3 | AAAS 3990 | 3 |
| Electives | 9 | Other GOALS as needed | 3 |
| GOAL V: (A) | 3 | Electives | 6 |
| | 15 | | 12 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

### AFRO-AMERICAN AND AFRICAN STUDIES (AAAS)

(101) **AAAS 1101. The Black Experience I. (3)** Personal development of Black awareness; opportunities for exploration of self-definition; and development of interpersonal relationship skills. Effective community dialogue and action; creation and facilitation of community involvement experience required. *(Fall, Spring)*

(102) **AAAS 1102. The Black Experience II. (3)** Prerequisite: AAAS 1101. Further personal development of Black awareness; student orientation to experience involving Black perspective; Afro-American experience as topic for study and examination. Community involvement experience required. *(Fall, Spring)*

(103) **AAAS 1103. The African Experience I. (3)** Introductory survey of the history and culture of African peoples within the context of pre-colonial, colonial, and independent Africa. Focus on unique social, political, economic processes and problems in Africa. In-depth study of outstanding African leaders as representatives of their societies. *(Fall)*

(104) **AAAS 1104. The African Experience II. (3)** Exploration of contemporary issues in Africa and their impact on Afro-Americans and other Africans in the diaspora. Impact of European colonization on Africa, including topics such as racism, imperialism, revolutionary and reform-oriented political movements, nationalism, urbanization, and Pan-Africanism. *(Spring)*

(201) **AAAS 2201. Introduction to Human Relations. (3)** Prerequisite: AAAS 1101. Understanding of self and others in a pluralistic society; analysis of theories of personal growth and interaction within the context of differing multi-ethnic values, mores and contributions. *(Fall, Spring)*

(203) **AAAS 2203. Afro-American Culture I. (3)** Focus on the aesthetic dimensions of Afro-American culture through examination of aspects of literature, music, drama, art and dance. *(Fall)*

(204) **AAAS 2204. Afro-American Culture II. (3)** Study of Black culture as manifested in social, political, economic and religious institutions through directed field work, lectures and research. *(Spring)*

(205) **AAAS 2205. African Culture I. (3)** Survey of lifestyles in Africa with emphasis on the patterns of social behavior and communal organization that link and relate to the Afro-American experience and heritage. Research required. *(Fall)*

(206) **AAAS 2206. African Culture II. (3)** Survey of African cultures through literature, music, drama, oral history and art with emphasis on the cultural undertones that link and relate the Afro-American experience and heritage. Creative research or community projects required. *(Spring)*

(350) **AAAS 3050. Topics in Afro-American and African Studies. (3)** Treatment of a special topic. May be repeated for additional credit as topics vary, with approval of the Chairperson. *(Fall, Spring)*

(390) **AAAS 3290. Research Methods. (3)** Prerequisite: completion of sophomore-year courses or instructor's permission. Design of a research project with emphasis on developing sound research skills and methods. *(Fall, Spring)*

(401) **AAAS 3601. Senior Seminar. (3)** Prerequisite: completion of junior-year courses. Corequisite: AAAS 3990. Reading, discussion, reports. Peer critique of conceptualization, methodology and research of Senior Project. May be repeated for credit with consent of Advisory Committee. *(Fall, Spring)*

(492) **AAAS 3692. Colloquium. (3)** Prerequisite: consent of the instructor. A weekly colloquium; research and writing; opportunity for intellectual stimulation, critique and problem solving. Open to majors and non-majors. *(Fall, Spring)*

(495) **AAAS 3895. Independent Study. (1-3)** Prerequisite: consent of the Department. Supervised investigation of a problem or subject in the area of Afro-American and African Studies. Majors only. May be repeated for credit. *(Fall, Spring)*

(499) **AAAS 3990. Senior Project. (2-15)** Prerequisite: completion of junior-year courses. Corequisite: AAAS 3601. The writing of a senior research paper or work on a community-related project. Emphasis on mastery of skills and content of the discipline. (May be repeated twice for credit with instructor's consent. *(Fall, Spring)*

# Department of Biology

*Chairperson:* Professor Hildreth
*Professors:* Edwards, Matthews, Menhinick, Oliver, Thomas
*Professor Emeritus:* Hechenbleikner
*Associate Professors:* Barden, Mellichamp, Ostrowski, Peters, Travis, Watts
*Assistant Professors:* Bashor, Langsam, Reynolds, Stoerker

The Department of Biology offers undergraduate programs leading to a Bachelor of Arts degree and a Bachelor of Science degree, as well as a minor. On the graduate level, the department offers programs leading to the Master of Arts degree and the Master of Science degree. (See pages 346-350 for more information about graduate study in biology.)

The biology programs can be tailored to fit the individual student's needs. Through course selection, the student can emphasize many areas within biology: botany and horticulture; zoological sciences, including physiology and development; microbiological sciences; and environment sciences. Opportunities for individual activity occur at every level from the available tutorial sessions with faculty in the freshman courses to honors research projects in the senior year.

## BACHELOR OF ARTS

A major in biology leading to the B.A. degree consists of 38 semester hours of biology including Introductory Biology 2111 and 2112; Genetics 3166; Cell Biology 3111; Animal Biology 3233; Plant Biology 3222; and Seminars 3600. Also required is one course in three of the four areas: Functional Biology, Population Biology, Developmental Biology and Microbial Biology; and a 4000-level elective. The B.A. degree requires six laboratories (Introductory Biology—2 labs; Botany and Zoology—2 labs; advanced courses—2 labs). Additional requirements are 12 semester hours of chemistry with associated labs, including Chemistry 1101 and 1102, and six semester hours of mathematics.* Care should be taken in selecting electives to ensure completion of University general education requirements.

Each biology major must show a proficiency through the second semester freshman level of a foreign language either by satisfactory completion of courses 1201 and 1202 in the language or by achieving a satisfactory score on an appropriate test.

## BACHELOR OF ARTS WITH AN OPTION IN MEDICAL TECHNOLOGY

A student majoring in biology may complete the departmental requirements for the B.A. degree in three years. Upon satisfactory completion of training in medical technology at a school of medical technology, which has been approved by the National Accrediting Agency for Clinical Laboratory Science for the Committee on Allied Health Education and Accreditation and affiliated with UNCC, the student may receive a B.A. degree in Biology from UNCC. It is possible to obtain a B.S. degree by careful planning with the adviser. Gaining admission to an approved school of medical technology is the responsibility of the student. A maximum of 30 hours will be accepted from the school of medical technology. Up to eight hours may be applied toward the requirements for the major in biology. The student must take a course in only two of the four areas required for the biology major, and have at least a 2.0 grade point average overall and in the major at the end of the junior year. The final 30 hours counted toward the degree and the last 12 hours counted toward the major prior to entering a school of medical technology must be taken at UNCC. The student may obtain information from the departmental adviser concerning Schools of Medical Technology at Mercy, Memorial or Presbyterian Hospitals in Charlotte, which are affiliated with UNCC in this program.

## BACHELOR OF SCIENCE

In addition to meeting the requirements for the B.A. degree, a student working toward the B.S. degree is required to take six additional hours in biology at the course level of 4000 or above for a total of 44 hours. Included in these six credits must be at least one course with laboratory or one separate laboratory course. Chemistry 2131 and 2132, with associated laboratories, Physics

**A course in computer programming language, excluding non-programming courses such as CSCI 1101, may be substituted for three hours of mathematics for departmental requirements; however, University requirements in mathematics/language must be met.*

1101 and 1102, and three additional hours of mathematics or computer science (excluding CSCI 1101) are required. Careful planning will permit the student to emphasize selected areas of specialization: Botany/Horticulture, Ecology, Genetics/Development, Microbiology, Physiology or Zoology.

## BIOLOGY MINOR

A minor in biology requires: (1) BIOL 2111 and 2112; (2) fourteen hours of electives including a minimum of two courses at the 4000 level or above and at least one laboratory course; and (3) a minimum grade point average of 2.0 in the biology hours submitted for the minor. Students pursuing a biology minor are responsible for meeting all course prerequisites and corequisites.

## HONORS PROGRAM IN BIOLOGY

The Honors Program is a research program for students majoring in biology.

*Admission.* Students are invited to participate in the program during their junior year by the Chairperson of the Department of Biology, based on the advice of the Department Honors Committee. To qualify, a student must have completed 60 semester hours, including at least 15 hours at UNCC. At least 36 of the completed hours must be in science and mathematics. Students must have a 3.2 GPA overall average, as well as a 3.2 GPA in biology.

An honors adviser and a supervisory committee will be chosen.

*Courses.* To graduate with honors, a student must complete BIOL 3701—Honors Research I and BIOL 3702—Honors Research II with a 3.5 average or better.

*Certification Requirements.* A cumulative grade point average of 3.2 or greater must be maintained. An honors thesis is required and the student must present a seminar on the project.

For more information, contact the Department of Biology.

## SUGGESTED CURRICULUM FOR THE BIOLOGY MAJOR LEADING TO THE B.A. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| BIOL 2111 | 4 | BIOL 2112 | 4 |
| Chemistry 1101, 1101L | 4 | English 1102 | 3 |
| English 1101 | 3 | Chemistry 1102, 1102L | 4 |
| Mathematics 1102 | 3 | *Mathematics or Computer Science | 3 |
| Elective | 3 | Electives | 3-4 |
| | 17 | | 17-18 |

### Sophomore Year

| | | | |
|---|---|---|---|
| BIOL Elective | 4 | BIOL Elective | 3-8 |
| Chemistry Elective | 4 | Electives | 5-8 |
| BIOL Elective (3000 level) | 3-4 | | |
| Electives | 3-6 | | |
| | 14-17 | | 13-16 |

### Junior Year

| | | | |
|---|---|---|---|
| BIOL Electives | 3-8 | BIOL Electives | 3-8 |
| Electives | 6-11 | Electives | 6-1 |
| | 14-17 | | 14-17 |

### Senior Year

| | | | |
|---|---|---|---|
| BIOL 3600 | 1 | BIOL Electives | 3-8 |
| BIOL Elective | 3-8 | Electives | 6-9 |
| Electives | 6-9 | | |
| | 13-17 | | 13-17 |

**Computer Science 1101 does not fulfill Biology requirement.*
*Note: General electives should be chosen to fulfill general education requirements (GOALS OF UNCC EDUCATION).*

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## SUGGESTED CURRICULUM FOR THE BIOLOGY MAJOR LEADING TO THE B.S. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| BIOL 2111 | 4 | BIOL 2112 | 4 |
| Chemistry 1101, 1101L | 4 | Chemistry 1102, 1102L | 4 |
| English 1101 | 3 | English 1102 | 3 |
| Mathematics 1103 | 3 | Mathematics 1120, 1141 or 1221 | 3 |
| Elective | 3 | Electives | 3-4 |
| | 16-17 | | 17-18 |

### Sophomore Year

| | | | |
|---|---|---|---|
| BIOL 3166, or Elective | 4 | BIOL Elective | 3-8 |
| Chemistry 2131, 2131L | 4 | Chemistry 2132, 2132L | 4 |
| Mathematics 1221 or 1442 or Computer Science* | 3 | Electives | 6-9 |
| BIOL Elective (3000 level) | 3-4 | | |
| Elective | 3 | | |
| | 17-18 | | 13-17 |

### Junior Year

| | | | |
|---|---|---|---|
| BIOL Elective | 6-8 | BIOL Electives | 6-8 |
| Physics 1101 | 4 | Physics 1102 | 4 |
| Electives | 6-9 | Electives | 3-6 |
| | 16-17 | | 16-18 |

### Senior Year

| | | | |
|---|---|---|---|
| BIOL Electives | 6-8 | BIOL 3600 | 1 |
| Electives | 6-9 | Biology Electives | 8 |
| | | Electives | 6 |
| | 14-17 | | 15 |

**Computer Science 1101 does not fulfill Biology requirement.*
*Note: General electives should be chosen to fulfill general education requirements (GOALS OF UNCC EDUCATION).*

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## SUGGESTED CURRICULUM OUTLINE FOR THE BIOLOGY MAJOR LEADING TO THE B.A. DEGREE WITH AN OPTION IN MEDICAL TECHNOLOGY

### Freshman Year

| | | | |
|---|---|---|---|
| BIOL 2111 | 4 | BIOL 2112 | 4 |
| Chemistry 1101, 1101L | 4 | Chemistry 1102, 1102L | 4 |
| Mathematics 1101 or 1103 | 3 | Mathematics Elective | 3 |
| English 1101 | 3 | English 1102 | 3 |
| Elective | 3 | Elective | 3 |
| | 17 | | 17 |

### Sophomore Year

| | | | |
|---|---|---|---|
| BIOL 3166 | 4 | BIOL Elective | 3-8 |
| Chemistry 2131, 2131L | 4 | Chemistry Elective | 4 |
| Electives | 6-7 | Electives | 7-8 |
| | 14-15 | | 14-16 |

### Junior Year

| | | | |
|---|---|---|---|
| BIOL 4255, 4255L | 4 | BIOL 3600 | 1 |
| BIOL Elective | 3-4 | BIOL 4191, 4191L | 4 |
| Electives | 7-8 | Electives | 10-12 |
| | 14-16 | | 15-16 |

### Senior Year

At an approved School of Medical Technology.

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

### BIOLOGY (BIOL)

Credits for all courses numbered 2000 and above are accepted toward the major. However, credits for courses numbered 1000 to 1273L are not counted as credits toward the major.

**Courses for Undergraduates**

(395) **BIOL 1000. Special Topics in Biology. (1-4)** Prerequisites: vary with course. Special topics for non-majors in biology. May be repeated for credit as topics vary. Lecture hours and laboratory hours will vary with the courses taught. *(On demand)*

(101) **BIOL 1110. Principles of Biology. (4)** Recommended as a general University elective. Fundamental principles of life. An introduction to biology with a human emphasis. Three lecture hours and one laboratory period of three hours a week. *(Fall, Spring)*

(102) **BIOL 1115. Principles of Biology II. (4)** Prerequisite: BIOL 1110 or consent of the instructor. A continuation of introductory biology for non-majors, BIOL 1110. Fundamental principles of life with a human emphasis. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

(301) **BIOL 1117. Natural History. (1)** Prerequisite: BIOL 1110. Plant and animal identification, ecological aspects of plant and animal distribution, the importance of conservation of natural resources and basic greenhouse horticulture practices. Three lecture hours and one laboratory period of three hours a week.

(207) **BIOL 1166. Human Heredity and Diversity. (3)** Prerequisite: BIOL 1110 or 2111. Not available for credit if credit has been given for BIOL 3166 or 4161. Basic principles of human heredity as applied to individuals and populations. Role of heredity and environment on the expression of physical, mental and behavioral traits. Three lecture hours a week. *(Spring)*

(203) **BIOL 1259. Bacteriology. (3)** Prerequisite: BIOL 1110 or 2111 and one semester of chemistry. Basic physiology of bacteria, fungi, protozoa and viruses, with emphasis on host-parasite interaction and control and epidemiology of infectious diseases. Three lecture hours a week. *(Spring)*

(203L) **BIOL 1259L. Bacteriology Laboratory. (1)** Prerequisite or corequisite: BIOL 1259. One laboratory period of three hours a week. *(Spring)*

(205) **BIOL 1273. Human Anatomy and Physiology. (3)** Prerequisites: BIOL 1110 or 2111 and one year of high school chemistry or one semester of college chemistry. Basic fundamentals of the anatomy and physiology of the human body as an integrated unit. Three lecture hours a week. *(Fall)*

(205L) **BIOL 1273L. Human Anatomy and Physiology Laboratory. (1)** Prerequisite or corequisite: BIOL 1273. One laboratory period of three hours a week. *(Fall)*

(395) **BIOL 2000. Special Topics in Biology. (1-4)** Prerequisites: vary with course. Special introductory topics for biology majors. May be repeated for credit as topics vary. Lecture hours and laboratory hours will vary with the courses taught. *(On demand)*

(161) **BIOL 2041. Natural Resources. (2)** Natural resource conservation and careers, including forestry, fisheries and wildlife management. Two lecture hours a week. *(Fall)*

(161L) **BIOL 2041L. Natural Resources Laboratory. (1)** Corequisite: BIOL 2041. Does not satisfy the departmental lab requirement or the general degree requirement in natural science. Field trips and applied techniques in natural resource management. One laboratory period of three hours a week. *(Fall)*

(121) **BIOL 2111. Introductory Biology I. (4)** Corequisite or prerequisite: CHEM 1101. The first course of a two-semester sequence in biology open to majors and non-majors. Integrated principles of the biology of cells, organisms and populations. Three lecture hours and one lab period of three hours a week. *(Fall)*

(122) **BIOL 2112. Introductory Biology II. (4)** Prerequisite: 2111. A continuation of BIOL 2111. Three lecture hours and one lab period of three hours a week. *(Spring)*

(395) **BIOL 3000. Special Topics in Biology. (1-4)** Prerequisite: vary with course. Special topics for intermediate level majors in biology. May be repeated for credit as topics vary. Lecture hours and laboratory hours will vary with the courses taught. *(On demand)*

(401) **BIOL 3005. Integrative Studies in Biology. (3)** No credit toward a biology major, except one hour which may be substituted for Biology 3600. A course for, but not limited to, persons preparing to teach grades 7-12. An integration of the attitudes and techniques necessary to teach laboratory-oriented courses. Three lecture hours a week. *(Fall)*

(231) **BIOL 3111. Cell Biology. (3)** Prerequisite: BIOL 2112. Prerequisite or corequisite: CHEM 2131. Composition, structure and function of cells. Three lecture hours a week. *(Spring)*

(231L) **BIOL 3111L. Cell Biology Laboratory. (1)** Prerequisite or corequisite: BIOL 3111.

(331) **BIOL 3166. Genetics. (3)** Prerequisite: BIOL 2112; prerequisite/corequisite: CHEM 1102. Basic concepts of heredity; principles of classical, molecular, and population genetics. Three lecture hours a week. *(Fall, Spring, Summer)*

(331L) **BIOL 3166L. Genetics Laboratory. (1)** Prerequisite or corequisite: BIOL 3166. One laboratory period of three hours a week. *(Fall, Spring)*

(317) **BIOL 3202. Horticulture. (3)** Prerequisite: BIOL 2112. Principles of horticulture, greenhouse management, environmental factors, production and maintenance of cultivars, and landscaping. Three lecture hours a week. *(Fall)*

(317L) **BIOL 3202L. Horticulture Laboratory. (1)** Prerequisite or corequisite: BIOL 3202. Greenhouse work, plant identification, and field trips. One laboratory period of three hours a week. *(Fall)*

(211) **BIOL 3222. Plant Biology. (4)** Prerequisite: BIOL 2112. The morphology, function, reproduction, phylogeny and ecology of plants. Three lecture hours and one laboratory period of three hours a week. *(Fall)*

**BIOL 3229. Field Botany. (3)** Prerequisite: BIOL 2112 or consent of Department. A field course stressing identification, classification and habitat of the vascular plants, particularly of the Piedmont, but also including the coastal plain and the mountains of North Carolina. Six hours per day for ten days. *(Presession)*

(221) **BIOL 3233. Animal Biology. (4)** Prerequisite: BIOL 2112. The morphology, function, development, phylogeny and ecology of the principle invertebrate and vertebrate types. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

(397) **BIOL 3405. Internship in Community Education and Service. (3)** Prerequisites: junior standing, acceptance into the program and approval of the Department. A project-oriented, service-learning internship with cooperating community organizations. The Department of Biology has the option of recognizing this credit as fulfilling departmental requirements and granting permission to repeat for credit. Maximum credit toward major is three hours.

(491) **BIOL 3600. Seminar. (1)** Required of all majors, normally taken during the senior year. Includes a standardized examination in biology. Student presentation of oral and written reports from pertinent biological literature. One hour a week. May be repeated for credit. *(Fall, Spring)*

(495) **BIOL 3701. Honors Research I. (3)** Independent honors project. By invitation; seniors only. *(Fall, Spring, Summer)*

(496) **BIOL 3702. Honor Research II. (3)** Prerequisite: BIOL 3701. Independent honors project. May be substituted for BIOL 3600. *(Fall, Spring, Summer)*

**BIOL 3800. Tutorial in Biology. (1-4)** Prerequisite: consent of Department. A course to permit junior and senior biology majors to engage in directed study in their fields of interest. Maximum credit toward major: two hours for B.A.; four hours for B.S. May be repeated for credit. *(Fall, Spring, Summer)*

(497) **BIOL 3900. Investigations in Biology. (1-4)** Prerequisite: consent of the Department. This course is designed to allow junior and senior biology majors to initiate research projects in their respective fields of interest. Maximum credit toward major: two hours for B.A.; four hours for B.S. May be repeated for credit as topics vary. *(Fall, Spring, Summer)*

**Courses for Advanced Undergraduates and Graduate Students**

(395) **BIOL 4000. Special Topics in Biology. (1-4) (1-4G)** Prerequisites and credit hours vary with topics. Special topics for advanced undergraduates. May be repeated for credit as topics vary. Lecture hours and laboratory hours will vary with the courses taught. *(Fall, Spring)*

(451) **BIOL 4111. Evolution. (3) (3G)** Prerequisites: BIOL 3166 and 3222 or 3233. Theories of evolution and forces which affect gene frequencies. Three lecture hours a week. *(Fall)*

((323) **BIOL 4133. Parasitology. (4) (4G)** Prerequisite: BIOL 3233. Morphology, life cycles, ecology, taxonomy and economic importance of parasites. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

(413) **BIOL 4139. Epidemiology. (3) (3G)** Prerequisite: BIOL 1259 or 4255. History and practices of epidemiology with emphasis on modes of transmission of clinically important infectious agents and the analysis of epidemiological data. Three lecture hours a week.

(369) **BIOL 4141. Environmental Problems. (3) (3G)** Prerequisites: BIOL 3222 and 3233 and CHEM 1102. Air, water and land pollution; resource depletion; energy and overpopulation. Three lecture hours a week.

(361) **BIOL 4144. Ecology. (3) (3G)** Prerequisites: BIOL 3222 and 3233. Interrelationships of organisms and their environment. Three lecture hours a week. *(Fall, Spring)*

(361L) **BIOL 4144L. Ecology Laboratory. (1) (1G)** Prerequisite or corequisite: BIOL 4144. One laboratory period of three hours per week. *(Fall, Spring)*

(461) **BIOL 4149. Limnology and Oceanography. (4) (4G)** Prerequisites: BIOL 3222 and 3233 and CHEM 1102. Geological, physical, chemical and biological aspects of lakes, streams, estuaries and oceans. Three lecture hours and one laboratory period of three hours a week. *(Fall)*

(335) **BIOL 4161. Human Genetics. (3) (3G)** Prerequisite: BIOL 3166. (Credit not available for both BIOL 4161 and 1166.) Inheritance of physical and mental characteristics in humans. Effects of mutation, selection, migration and environment are emphasized. Three lecture hours a week. *(Spring)*

(437) **BIOL 4169. Cytogenetics. (4) (4G)** Prerequisite: BIOL 3166. Plant and animal cells, with emphasis on problems of chromosomal organization, function and behavior including the role of chromosome number and aberrations in speciation and evolution. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

(477) **BIOL 4171. Cell Physiology. (3) (3G)** Prerequisites: BIOL 3111 and CHEM 2131. The fundamental physiochemical properties of cells. Three lecture hours a week. *(Fall)*

(473) **BIOL 4191. Immunology. (3) (3G)** Prerequisites: BIOL 3111, 3166 and CHEM 2131. Cellular, molecular and genetic basis for immunity; physical chemistry of antigens and antibodies and their interactions; defense mechanisms. Three lecture hours a week. *(Spring, Summer)*

(473L) **BIOL 4191L. Immunology Laboratory. (1) (1G)** Prerequisite or corequisite: BIOL 4191. One laboratory period of three hours a week. *(Spring)*

(431) **BIOL 4199. Molecular Biology. (3) (3G)** Prerequisites: BIOL 3111, 3166 and CHEM 2132. Structural and functional interaction of nucleic acids and proteins in the replication, transcription and translation of genetic material. Three lecture hours a week. *(Fall)*

(417) **BIOL 4205. Advanced Horticulture. (3) (3G)** Prerequisite: BIOL 3202. Topics in ornamental horticulture and landscaping, including greenhouse projects and field trips. Two lecture hours and three hours of lab per week. *(Spring)*

(319) **BIOL 4221. Plant Systematics. (4) (4G)** Prerequisite: BIOL 3202 or 3222. Identification and classification of vascular plants, including experimental concepts of speciation. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

**BIOL 4223. Cryptogamic Botany. (4) (4G)** Prerequisite: BIOL 3222. The identification, structure, function, ecology and evolutionary relationships of algae, bryophytes, and ferns. Three lecture hours and one three-hour lab a week. *(Fall)*

**BIOL 4229. Dendrology. (4) (4G)** Prerequisite: BIOL 4221. The identification, structure, function, reproduction, ecology, and evolutionary relationships of woody plants. Additional work required by graduate students. Three lecture hours and one three-hour lab a week. *(Fall)*

(325) **BIOL 4231. Invertebrate Zoology. (4) (4G)** Prerequisite: BIOL 3233. Taxonomy, anatomy, physiology and life histories of selected invertebrates. Three lecture hours and one laboratory period of three hours a week.

(321) **BIOL 4233. Vertebrate Zoology. (4) (4G)** Prerequisite: BIOL 3233. Taxonomy, anatomy, physiology and life histories of vertebrates. Three lecture hours and one laboratory period of three hours a week. *(Fall)*

(355) **BIOL 4243. Animal Behavior. (3) (3G)** Prerequisite: BIOL 3233. An ethological approach to how animals respond to their environment. Causation, development and adaptive significance of behavior in social systems. Three lecture hours a week. *(Fall)*

(355L) **BIOL 4243L. Animal Behavior Laboratory. (1) (1G)** Prerequisite or corequisite: BIOL 4243. One laboratory period of three hours a week. *(Fall)*

(311) **BIOL 4255. Microbiology. (3) (3G)** Prerequisites: BIOL 3111 and 3166. Morphology, metabolism, physiology, pathogenicity and ecology of micro-organisms. Three lecture hours a week. *(Fall)*

(311L) **BIOL 4255L. Microbiology Laboratory. (1) (1G)** Prerequisite or corequisite: BIOL 4255. One laboratory period of three hours a week. *(Fall)*

(373) **BIOL 4272. Plant Physiology. (3) (3G)** Prerequisites: BIOL 3111 and 3222. Metabolic and physiological processes of plants and conditions which affect or regulate these processes. Three lecture hours a week. *(Fall)*

(373L) **BIOL 4272L. Plant Physiology Laboratory. (1) (1G)** Prerequisite or corequisite: BIOL 4272. One laboratory period of three hours a week. *(Spring)*

(375) **BIOL 4273. Animal Physiology. (3) (3G)** Prerequisite: BIOL 3111 and 3233. Fundamental control mechanisms that operate to maintain the homeostatic state. Three lecture hours a week. *(Spring)*

**BIOL 4273L. Animal Physiology Laboratory. (1) (1G)** Prerequisite or corequisite: BIOL 4273. One laboratory period of three hours a week. *(Spring)*

(333) **BIOL 4282. Plant Growth and Development. (4) (4G)** Prerequisites: BIOL 3111 and 3222. Growth and development of plants with emphasis on chemical and environmental control of structural differentiation. Three lecture hours and one lab period of three hours a week. *(Spring)*

(338) **BIOL 4283. Embryology. (3) (3G)** Prerequisite: BIOL 3166. Developmental processes occurring chiefly during gametogenesis, fertilization, early embryogenesis and organogenesis. Three lecture hours a week. *(Fall)*

(338L) **BIOL 4283L. Embryology Laboratory. (1) (1G)** Prerequisite or corequisite: BIOL 4283. One laboratory period of three hours a week. *(Fall)*

(347) **BIOL 4291. Histology. (4) (4G)** Prerequisites: BIOL 3111 and 3233. Animal tissues and organs; techniques of preparing tissues for analysis. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

(345) **BIOL 4293. Comparative Vertebrate Anatomy. (4) (4G)** Prerequisite: BIOL 3233. Comparative studies of the anatomy, physiology and functional adaptations of selected vertebrates with emphasis on evolutionary developments, especially in mammals. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

THE 5000-LEVEL COURSES ARE PRIMARILY GRADUATE COURSES; HOWEVER, ADVANCED UNDERGRADUATES MAY ENROLL IN THOSE COURSES FOR UNDERGRADUATE CREDIT. FOR COMPLETE COURSE DESCRIPTIONS, SEE PAGES 347-349.

# Department of Chemistry

*Chairperson:* Associate Professor Howard
*Charles H. Stone Professor Emeritus:* Burson
*Professors:* Bush, Crosthwaite, DuBois, Gibson, Rillema
*Professor Emeritus:* Kuppers
*Associate Professors:* Cassen, Jones, Mattingly, Walsh
*Assistant Professors:* Daignault, Ogle

Chemistry is a discipline fundamental to a wide variety of careers in industry, research and the allied health fields. A strong foundation in chemistry is necessary for careers in medicine, molecular biology, biochemistry, industrial or government research, pharmacy, high school teaching and chemical engineering. A background in chemistry may also be useful for careers in chemical sales, industrial management, business administration and environmental management.

The Chemistry Department offers a B.S. degree and a research-based M.S.. degree, which provide the background necessary for a career in industry or for further graduate studies in chemistry and related fields. In addition, a B.A. degree in chemistry is available for students who plan to pursue professional studies in areas such as medicine, dentistry, veterinary medicine and optometry. The B.S. degree is approved by the American Chemical Society.

Programs leading to careers in medical technology, pharmacy and chemical engineering are available in cooperation with other institutions.

## BACHELOR OF SCIENCE

Students planning to start careers as chemists with the baccalaureate degree and those who intend to prepare for graduate study in chemistry should pursue the B.S. degree.

A major in chemistry leading to the B.S. degree consists of a minimum of 44 semester hours of chemistry, among which must be included Chemistry 1101, 1102, 1101L, 1102L (or 1106L), 2131, 2132, 2131L, 2132L, 3111, 3141, 3142, 3141L, 3142L, 4111, 4121, 4131 and two semesters of Chemistry 4695. Related work in mathematics and physics must include Mathematics 1141, 1142, and 2141 or 2171 and Physics 2221, 2231, 2221L, and 2231L. Two years of German or Russian language instruction are required for the B.S. degree.

The B.S. curriculum can be tailored to fit individual needs of those preparing for medical and dental schools, those considering graduate work in sciences closely related to chemistry, and those desiring a liberal education with concentration in chemistry and related natural sciences.

## BACHELOR OF ARTS

A major in chemistry leading to the B.A. degree consists of a minimum of 28 semester hours of chemistry among which must be included Chemsitry 1101, 1102, 1101L, 1102L (or 1106L), 2131, 2132, 2131L, 2132L and 3111. Related work must include Mathematics 1141, 1142 and a complete sequence of physics courses selected from one of the following options, A, B or C: A. Physics 1101, 1102; B. Physics 2221, 2231, 2221L, 2231L; or C. Physics 1102, 2221, 2221L. Credit toward the 28 hours required for the B.A. degree will not be given for either CHEM 4695 or 4900. Topics courses, such as CHEM 3090 and 5090, cannot be included within the 28 hours without prior departmental approval.

**Teacher Certification.** Students who complete a major in chemistry automatically meet the chemistry subject matter requirements, on the secondary level, for teacher certification in North Carolina. Students seeking teacher certification should consult a co-adviser in the College of Education and Allied Professions for detailed planning of their professional education.

## BACHELOR OF ARTS WITH AN OPTION IN MEDICAL TECHNOLOGY

A student majoring in chemistry may complete the departmental requirements for the B.A. degree in three years. Upon satisfactory completion of training in medical technology at a school of medical technology which has been approved by the Accrediting Agency for Clinical Laboratory Science for the Committee on Allied Health Education and Accreditation and UNCC, the student may

receive a B.A. degree in chemistry from UNCC. Gaining admission to an approved school of medical technology is the responsibility of the student. A maximum of 30 hours will be accepted from the school of medical technology. Four of these hours will apply toward the requirements for the major in chemistry. The student must have at least a 2.0 grade point average, overall and in the major, at the end of the junior year. The final 30 hours counted toward the degree and the last 12 hours counted toward the major prior to entering a school of medical technology must be taken at UNCC. The student may obtain information from his departmental adviser concerning those Schools of Medical Technology at Mercy, Memorial or Presbyterian Hospitals in Charlotte, which are affiliated with UNCC in this program. Individual applications for admission to a particular school of medical technology must be submitted.

## PREPROFESSIONAL OPTIONS WITH CHEMISTRY AS A MAJOR

Students majoring in chemistry (B.A. or B.S.) who are planning future studies in medicine, dentistry or other allied health professions should take as electives: BIOL 2111 and 2112, CHEM 3175, and at least one additional biology course offered at the 3000 or 4000 level.

Chemical engineering and pharmacy students also have the option of majoring in chemistry. Interested students should consult pages 324-326 of this *Catalog* under "Preparation for Professional Schools" for the appropriate suggested curriculum.

## HONORS PROGRAM IN CHEMISTRY

This program is intended primarily for chemistry majors. It is a research-oriented program. Details are available from the Chemistry Department.

*Admission.* Consideration for admission to the program may be initiated by the student or by any faculty member. The Honors Committee of the Chemistry Department will formally approve admission. The student will formally enter the honors program at the beginning or halfway through his/her junior year.

*Courses.* Independent research, seminars and laboratory courses are required.

*Certification Requirements.* To obtain a degree with Honors in Chemistry, a student must successfully complete two semesters of independent research at the honors level, two semesters of the senior seminar at the honors level and at least one specified laboratory course at the honors level.

## RECOMMENDED CURRICULUM FOR THE CHEMISTRY MAJOR LEADING TO THE B.S. DEGREE†

### Freshman Year

| | | | |
|---|---|---|---|
| CHEM 1101* | 3 | CHEM 1102* | 3 |
| CHEM 1101P | 0 | CHEM 1102P | 0 |
| CHEM 1101L | 1 | CHEM 1106L | 1 |
| English 1101 | 3 | English 1102 | 3 |
| Mathematics 1141** | 4 | Mathematics 1142** | 4 |
| German 1201 | 4 | German 1202 | 4 |
| | 15 | | 15 |

### Sophomore Year

| | | | |
|---|---|---|---|
| CHEM 2131 | 3 | CHEM 2132 | 3 |
| CHEM 2131P | 0 | CHEM 2132P | 0 |
| CHEM 2131L | 1 | CHEM 2132L | 1 |
| Mathematics 2141 or 2171 | 3 | Physics 2231 | 3 |
| Physics 2221 | 3 | Physics 2231L | 2 |
| Physics 2221L | 1 | German 2202 | 4 |
| German 2201 | 4 | Elective*** | 3 |
| | 15 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| CHEM 3141 | 3 | CHEM 3142 | 3 |
| CHEM 3141L | 1 | CHEM 3142L | 1 |
| CHEM 3111 | 4 | CHEM 4111 | 4 |
| Electives*** | 6 | Electives*** | 6 |
| | 14 | | 14 |

### Senior Year

| | | | |
|---|---|---|---|
| CHEM 4121 | 4 | CHEM 4131 | 4 |
| CHEM 4900 | 2 | CHEM 4900 | 2 |
| CHEM 4695 | 1 | CHEM 4695 | 1 |
| Electives*** | 9 | Electives*** | 9 |
| | 16 | | 16 |

*†The B.S. degree program is approved by the Committee on Professional Training of the American Chemical Society.*
**Students can receive credit by examination for CHEM 1101 and 1102. (See page 71.)*
***The initial course in the mathematics sequence is based on placement criteria established by the Department of Mathematics.*
****Electives: 21 semester hours of electives must be used to meet general education requirements as follows: GOAL I - 6 hours; GOAL III - 3 hours; GOAL V - 6 hours; GOAL VI - 6 hours. The other general education requirements are met by the suggested courses for the B.S. and B.A. degrees.*

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## RECOMMENDED CURRICULUM FOR THE CHEMISTRY MAJOR LEADING TO THE B.A. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| CHEM 1101* | 3 | CHEM 1102* | 3 |
| CHEM 1101P | 0 | CHEM 1102P | 0 |
| CHEM 1101L | 1 | CHEM 1106L or 1102L | 1 |
| English 1101 | 3 | English 1102 | 3 |
| Mathematics 1103** | 4 | Mathematics 1141** | 4 |
| Electives*** | 6 | Electives*** | 6 |
| | 16 | | 17 |

### Sophomore Year

| | | | |
|---|---|---|---|
| CHEM 2131 | 3 | CHEM 2132 | 3 |
| CHEM 2131P | 0 | CHEM 2132P | 0 |
| CHEM 2131L | 1 | CHEM 2132L | 1 |
| Mathematics 1142 | 4 | Foreign Language 1202 | 4 |
| Foreign Language 1201 | 4 | Electives*** | 9 |
| Electives*** | 3 | | |
| | 15 | | 17 |

### Junior Year

| | | | |
|---|---|---|---|
| CHEM 3111 | 4 | CHEM Elective | 3 |
| Mathematics | 3 | Mathematics | 3 |
| Physics | 4 | Physics | 4 |
| Electives*** | 4 | Electives*** | 7 |
| | 15 | | 17 |

### Senior Year

| | | | |
|---|---|---|---|
| CHEM Elective | 4 | CHEM Elective | 4 |
| Electives*** | 12 | Electives*** | 12 |
| | 16 | | 16 |

**Students can receive credit by examination for CHEM 1101 and 1102. (See page 71.)*

***The initial course in the mathematics sequence is based on placement criteria established by the Department of Mathematics.*

****Electives: 21 semester hours of electives must be used to meet general education requirements as follows: GOAL I - 6 hours; GOAL III - 3 hours; GOAL V - 6 hours; GOAL VI - 6 hours. The other general education requirements are met by the suggested courses for the B.S. and B.A. degrees.*

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## RECOMMENDED CURRICULUM FOR THE CHEMISTRY MAJOR LEADING TO THE B.A. DEGREE WITH AN OPTION IN MEDICAL TECHNOLOGY

### Freshman Year

| | | | |
|---|---|---|---|
| CHEM 1101* | 3 | CHEM 1102* | 3 |
| CHEM 1101P | 0 | CHEM 1102P | 0 |
| CHEM 1101L | 1 | CHEM 1106L | 1 |
| Mathematics 1103** | 3 | Mathematics 1141** | 4 |
| English 1101 | 3 | English 1102 | 3 |
| Biology 2111 | 4 | Biology 2112 | 4 |
| Elective*** | 3 | | |
| | 17 | | 15 |

### Sophomore Year

| | | | |
|---|---|---|---|
| CHEM 2131 | 3 | CHEM 2132 | 3 |
| CHEM 2131P | 0 | CHEM 2132P | 0 |
| CHEM 2131L | 1 | CHEM 2132L | 1 |
| Mathematics 1142 | 4 | Foreign Language 1202 | 4 |
| Foreign Language 1201 | 4 | Electives*** | 5 |
| Physics 1101 | 4 | Physics 1102 | 4 |
| | 16 | | 17 |

### Junior Year

| | | | |
|---|---|---|---|
| CHEM 3111 | 4 | CHEM 3112 | 4 |
| Biology 4255 | 3 | Biology 3166 | 4 |
| Biology 4255L | 1 | Biology 4191 | 3 |
| Electives*** | 9 | Biology 4191L | 1 |
| | | Electives*** | 5 |
| | 17 | | 17 |

Minimum of 90 semester hours required.

### Senior Year

At an approved school of medical technology.

**Students can receive credit by examination for CHEM 1101 and 1102. (See page 71.)*

***The initial course in the mathematics sequence is based on placement criteria established by the Department of Mathematics.*

****Electives: 21 semester hours of electives must be used to meet general education requirements as follows: GOAL I - 6 hours; GOAL III - 3 hours; GOAL V - 6 hours; GOAL VI - 6 hours. The other general education requirements are met by the suggested courses for the B.S. and B.A. degrees.*

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

### CHEMISTRY (CHEM)

**Separate lecture and laboratory sections**—Although the laboratory and lecture sections of CHEM 1101, 1102, 1103, 1104, 2131 and 2132 are taught as separate courses, it is strongly recommended that students take the appropriate laboratory concurrently with the lecture. Students with severe scheduling problems or students with course programs that do not require the laboratory may take the lecture without the laboratory. Retention of a laboratory after withdrawing from its associated lecture requires departmental approval

Students using CHEM 1101 and 1102 or CHEM 1103 and 1104 to satisfy the general education requirements for the B.A. and B.S. degree (page 75) must also take CHEM 1101L and 1102L, or CHEM 1103L and 1104L, respectively.

**Courses for Undergraduates**

(101) **CHEM 1101. Principles of Chemistry. (3)** Corequisite: CHEM 1101P. Prerequisite or corequisite: MATH 1101 or 1103. A principles-oriented course for science majors. Fundamental postulates and laws of chemistry; the relationship of atomic structure to physical and chemical properties of the elements. Three lecture hours per week. *(Fall, Spring, Summer) (Evenings)*

(101L) **CHEM 1101L. Principles of Chemistry Laboratory. (1)** Prerequisite or corequisite: CHEM 1101. Experimental investigations involving the fundamental postulates and laws of chemistry. One laboratory period of three hours per week. *(Fall, Spring, Summer) (Evenings)*

**CHEM 1101P. Principles of Chemistry Problem Session. (0)** Corequisite: CHEM 1101. A period designed for weekly problem sessions. (Attendance optional.) *(Fall, Spring, Summer) (Evenings)*

(102) **CHEM 1102. Principles of Chemistry. (3)** Prerequisite: CHEM 1101. Corequisite: CHEM 1102P. Continuation of CHEM 1101. Three lecture hours per week. *(Fall, Spring, Summer) (Evenings)*

(102L) **CHEM 1102L. Principles of Chemistry Laboratory. (1)** Prerequisites: CHEM 1101 and 1101L. Prerequisite or corequisite: CHEM 1102. Continuation of CHEM 1101L. One laboratory period of three hours per week. *(Fall, Spring, Summer) (Evenings)*

**CHEM 1102P. Principles of Chemistry Problem Session. (0)** Corequisite: CHEM 1102. A period designed for weekly problem sessions. (Attendance optional.) *(Fall, Spring, Summer) (Evenings)*

(103) **CHEM 1103. General Chemistry. (3)** Corequisite: CHEM 1103P. Designed primarily for non-science majors; does not qualify as a prerequisite for any course other than CHEM 1104. Fundamentals of chemistry and selected topics from inorganic chemistry. Three hours per week. (Credit for both 1101 and 1103 will not be given.) *(Fall, Summer)*

(103L) **CHEM 1103L. General Chemistry Laboratory. (1)** Prerequisite or corequisite: CHEM 1103. Laboratory investigations into the nature of inorganic compounds. One laboratory period of three hours per week. (Credit for both 1101L and 1103L will not be given.) *(Fall, Summer)*

**CHEM 1103P. General Chemistry Problem Session. (0)** Corequisite: CHEM 1103. A period designed for weekly problem sessions. (Attendance optional.) *(Fall, Summer)*

(104) **CHEM 1104. General Chemistry. (3)** Prerequisite: CHEM 1103. Corequisite: CHEM 1104P. Designed primarily for non-science majors; does not qualify as a prerequisite for any other chemistry course. Continuation of CHEM 1103, with emphasis on organic chemistry and selected topics in biochemistry. Three lecture hours per week. (Credit for both 1102 and 1104 will not be given). *(Spring, Summer)*

(104L) **CHEM 1104L. General Chemistry Laboratory. (1)** Prerequisites: CHEM 1103 and 1103L. Prerequisite or corequisite: CHEM 1104. Continuation of CHEM 1103L, with emphasis on the reactions and characterization of organic compounds. One laboratory period of three hours per week. (Credit for both 1102L and 1104L will not be given.) *(Spring, Summer)*

**CHEM 1104P. General Chemistry Problem Session. (0)** Corequisite: CHEM 1104. A period designed for weekly problem sessions. (Attendance optional.) *(Spring, Summer)*

(106L) **CHEM 1106L. Introduction to Modern Laboratory Methods. (1)** Prerequisite or corequisite: CHEM 1102. One laboratory period of three hours per week. The laboratory will consist of open-ended studies on topics compatible with the CHEM 1102 lecture materials. A quasi-research approach is used, involving modern instrumentation extensively. The background needed to utilize microcomputers in data acquisition and data reduction is presented. The course is intended for students planning to take additional chemistry courses and can be substituted for the CHEM 1102L requirement for all degrees in chemistry. *(Spring)*

(225) **CHEM 2125. Inorganic Chemistry. (3)** Prerequisite: CHEM 1102. Descriptive inorganic chemistry including acid-based and non-aqueous solvent concepts. Three lecture hours a week. *(Spring)*

(231) **CHEM 2131. Organic Chemistry. (3)** Prerequisite: CHEM 1102. Corequisite: CHEM 2131P. Descriptive principles and techniques of organic chemistry and their applications to reactions of aliphatic and aromatic compounds and natural products. Three lecture hours per week. *(Fall, Spring, Summer)*

(231L) **CHEM 2131L. Organic Chemistry Laboratory. (1)** Prerequisites: CHEM 1102 and CHEM 1102L. Prerequisite or corequisite: CHEM 2131. Laboratory investigations into the physical and chemical properties of organic compounds. One laboratory period of three hours per week. *(Fall, Spring, Summer)*

**CHEM 2131P. Organic Chemistry Problem Session. (0)** Corequisite: CHEM 2131. A period designed for weekly problem sessions (attendance optional) and for administration of two-hour examinations (attendance required). *(Fall, Spring, Summer)*

(232) **CHEM 2132. Organic Chemistry. (3)** Prerequisite: CHEM 2131. Corequisite: CHEM 2132P. Continuation of CHEM 2131. Three lecture hours per week. *(Fall, Spring, Summer)*

(232L) **CHEM 2132L. Organic Chemistry Laboratory. (1)** Prerequisite: CHEM 2131L. Prerequisite or corequisite: CHEM 2132. Continuation of CHEM 2131L. One laboratory period of three hours per week. *(Fall, Spring, Summer)*

**CHEM 2132P. Organic Chemistry Problem Session. (0)** Corequisite: CHEM 2132. A period designed for weekly problem sessions (attendance optional) and for administration of two-hour examinations (attendance required.) *(Fall, Spring, Summer)*

(236L) **CHEM 2136L. Organic Chemistry Laboratory. (1)** Prerequisite or corequisite: CHEM 2132. Laboratory investigation involving a research-type project in lieu of CHEM 2132L. Available only upon departmental invitation. *(On demand)*

(241) **CHEM 2141. Survey of Physical Chemistry. (3)** Prerequisites: CHEM 1102, 1102L, MATH 1120 or one semester of calculus (high school or higher), PHYS 1101 or one semester of physics (high school or higher). A course designed for students in the life sciences or other desiring a one-semester survey of the physical aspects of chemistry. Application of thermodynamics to chemical reactions, energy transfer processes, and chemical and physical equilibria; the study of reaction rates and mechanisms; structure of gases, liquids and solids; molecular structure and spectroscopy. Three lecture hours per week. *(Spring)*

(390) **CHEM 3090. Special Topics in Chemistry. (1-4)** Prerequisite: consent of Department. May be repeated for credit. Lecture and/or laboratory hours will vary with the nature of the course taught. Topics chosen from analytical, biochemistry, inorganic, organic and physical chemistry. *(On demand)*

(311) **CHEM 3111. Quantitative Analysis. (4)** Prerequisites: CHEM 1102, 1102L. Introductory course in quantitative and analytical chemistry. Principles of equilibrium, classical and simple instrumental approaches are considered. Two lecture hours and two laboratory periods of three hours each week. *(Fall)*

(312) **CHEM 3112. Modern Separation Techniques. (4)** Prerequisites: CHEM 2131, 2131L and 3111. A theoretical and application course in modern separation techniques with emphasis on liquid and gas chromatography. Two lecture hours and two laboratory periods of three hours each week. *(Spring) (Alternate years)*

(341) **CHEM 3141. Physical Chemistry. (3)** Prerequisites: CHEM 1102, 1102L; PHYS 2231 and 2231L. Prerequisite or corequisite: MATH 2141 or 2171. The application of classical thermodynamics and the phase rule to chemical equilibrium; electrochemistry; the kinetic theory of gases and elements of statistical mechanics applied to chemical processes; atomic and molecular structure interpreted in quantum mechanical terms. Three lecture hours per week. *(Fall)*

(341L) **CHEM 3141L. Physical Chemistry Laboratory. (1)** Prerequisite or corequisite: CHEM 3141. One laboratory period of three hours per week. *(Fall)*

(342) **CHEM 3142. Physical Chemistry. (3)** Prerequisite: CHEM 3141. Continuation of CHEM 3141. Three lecture hours per week. *(Spring)*

(342L) **CHEM 3142L. Physical Chemistry Laboratory. (1)** Prerequisite: CHEM 3141L. Prerequisite or corequisite: CHEM 3142. Continuation of CHEM 3141L. One lab period of three hours per week. *(Spring)*

(375) **CHEM 3175. Introductory Biochemistry. (3) (3G)** Prerequisite: CHEM 2132. (Not available for graduate credit to students in the Chemistry Department.) The chemical constitution of living matter, biochemical processes. Three lecture hours per week. *(Fall)*

(375L) **CHEM 3175L. Introductory Biochemistry Laboratory. (1) (1G)** Prerequisite: CHEM 2132L. Prerequisite or corequisite: CHEM 3175. (Not available for graduate credit to students in the Chemistry Department.) A series of laboratory investigations into the chemical composition of living matter and the biochemical processes of life, introducing experimental techniques of modern biochemical research. Eleven four-hour lab periods per semester. *(Fall)*

(397) **CHEM 3197. Internship in Community Education and Service. (1-3)** Prerequisites: junior standing, acceptance into the program and approval of the Department. A project-oriented, service learning internship with cooperating community organizations. (Credit toward the B.A. and B.S. degrees in chemistry will not be given.) May be repeated for credit with Department permission. Offered on a *Pass/No Credit* basis only. *(On demand)*

**Courses for Advanced Undergraduates and Graduate Students**

(411) **CHEM 4111. Instrumental Analysis. (4) (4G)** Prerequisites: CHEM 3111, 3141, 3141L. A discussion of selected modern instrumental methods of analysis, including theory and practice, with considerable attention given to the instrument and elementary electronics involved in the techniques. Two lecture hours, two three-hour lab periods per week. *(Spring)*

(412) **CHEM 4112. Applied Microcomputer Interfacing in Chemistry. (4) (4G)** Prerequisite: departmental approval. Three lecture hours and one lab period of three hours each week. Presentation of the background needed to apply computer interfacing in chemical research, including machine language programming and elementary digital electronics, and discussion of application of computer automation in chemical research. The laboratory illustrates solutions to solving interfacing problems. No background in programming or electronics required. *(Spring) (Alternate years)*

(421) **CHEM 4121. Advanced Inorganic Chemistry. (4) (4G)** Prerequisites: CHEM 3142, 3142L. Theoretical inorganic chemistry including the application of physico-chemical principles to the study of inorganic systems. Laboratory work involves inorganic preparations and characterization techniques. Three lecture hours and one laboratory period of three hours a week. *(Fall)*

(431) **CHEM 4131. Advanced Organic Chemistry. (4) (4G)** Prerequisites: CHEM 2132, 2132L and 3111. Recent developments in organic chemistry. Laboratory techniques of organic chemistry with emphasis on qualitative organic analysis including instrumental methods. Two lecture hours and two laboratory periods of three hours each week. *(Spring)*

(445) **CHEM 4145. Advanced Physical Chemistry. (3) (3G)** Prerequisite: CHEM 3142. Topics selected from quantum chemistry and/or statistical thermodynamics. Three lecture hours per week. *(On demand)*

(475) **CHEM 4175. Physical Biochemistry. (3) (3G)** Prerequisites: CHEM 2132, 2132L, and 3141. Colloid systems, equilibria in biological fluids, mass and energy transport in fluids and in association with membranes, energy storage and dissipation with relation to specific chemical bonding, enzyme kinetics. Three lecture hours per week. *(On demand)*

(495) **CHEM 4695. Chemistry Seminar. (1) (1G)** Prerequisite: senior standing. Discussion of recent developments and special topics in chemistry. Written and oral reports are required. May be repeated for credit. *(Fall, Spring)*

(490) **CHEM 4900. Independent Study and Research. (1-4) (1-4G)** Prerequisite: consent of the instructor overseeing the research. Independent study and research. A senior project in any of these fields of chemistry: organic, physical, analytical, inorganic chemistry or biochemistry; introduction to research. Hours for laboratory and library work to be determined. May be repeated for credit. *(Fall, Spring, Summer)*

ADVANCED UNDERGRADUATES MAY TAKE CHEM 5090 FOR UNDERGRADUATE CREDIT. SEE PAGE 356 FOR COMPLETE COURSE DESCRIPTION.

# Department of Criminal Justice

*Chairperson:* To be named
*Professors:* Adams, Dean
*Associate Professors:* Hirschel, Vogel
*Visiting Assistant Professor:* Little
*Lecturers:* Bing, Klein
*Adjunct Professors:* Dorin, Michalowski, Sultan

As society and the problems of crime and delinquency have become increasingly complex, so has the field of criminal justice. Courtroom activity has consequences for law enforcement; corrections reforms have consequences for the courts. The criminal justice professional needs knowledge and understanding of all three major components to perform successfully in any one of them. Toward this end the Department of Criminal Justice offers students the opportunity to acquire knowledge of the broader criminal justice system while preparing specifically for one of many possible careers in criminal justice.

Undergraduate students pursuing the academic study of the criminal justice system, a career in a criminal justice field, or preparation for graduate study may select the criminal justice curriculum leading to a Bachelor of Science degree. Undergraduate students may concentrate in **Corrections, Juvenile Justice, Law Enforcement** or **Research, Planning and Evaluation.** Transfer students with an associate degree in Corrections, Law Enforcement or Paralegal Studies will take 18 semester hours of approved 3000- or 4000-level criminal justice course work to complete a **General Criminal Justice** concentration. The Department also offers a minor.

The Master of Science degree program in Criminal Justice is designed to prepare individuals to apply social science concepts and analytical methods to the complex and rapidly changing system of justice and social control. The development of a broad understanding of the system, and general decision-making and problem-solving skills, is intended to assist the student in dealing with the responsibilities and concerns of criminal justice agencies. Graduates of the program will have professional preparation in the areas of law enforcement, corrections and criminal justice management. For more information on the M.S. program, see pages 361-363.

Students may enroll in the B.S. or M.S. degree programs on either a full-time or part-time basis. Evening classes are scheduled to accommodate part-time students.

## BACHELOR OF SCIENCE

A major in criminal justice requires 30 semester hours of criminal justice courses, including CJUS 2100 General Criminal Justice, CJUS 3100 Criminal Justice Theory, and CJUS 3101 Research Methods in Criminal Justice. Eighteen semester hours of the 30 semester hours of required criminal justice courses must be taken as 3000- or 4000-level course work. A minimum of a *C* average in all criminal justice course work and at least a *C* in CJUS 2100, 3100 and 3101 is required.

Students majoring in criminal justice must also complete either a minor in another discipline or 15 semester hours of approved related work. This related work must involve courses from three of the following disciplines: accounting, anthropology, economics, geography, history, English, social work, philosophy, political science, psychology, religion or sociology, or others as approved by the student's adviser. Students majoring in criminal justice are required to complete MATH 1101, and either MATH 1222 or a course in social measurement. A course in social measurement will not satisfy the general degree requirements for mathematics.

While not required, students are encouraged to participate in internship programs available through the Department. Internships provide opportunitites to combine theory and practice in a realistic setting, and to make more judicious career decisions.

## CRIMINAL JUSTICE MINOR

A minor in criminal justice is available to all undergraduates except criminal justice majors and requires 18 semester hours including: CJUS 2100 and 3100, and 12 semester hours of upper-division criminal justice electives.

## CONCENTRATIONS

Course work is influenced by the concentration chosen by the student. Students must complete 12 semester hours of work in courses that pertain to their concentration. Five concentrations are available within the Department.

**Concentration in Corrections** (12 semester hours)

This concentration is offered for students interested in careers in probation, parole, correctional institutions and related services. Requirements include CJUS 3150 Community Corrections, CJUS 3151 Institutional Corrections Subsystems, and six additional semester hours to be selected from the following courses or other courses approved by the student's adviser:

| | | |
|---|---|---|
| CJUS | 3130 | Corrections Administration |
| CJUS | 3152 | Institutional Corrections |
| CJUS | 3160 | Victims and the Criminal Justice System |
| CJUS | 3400 | Practicum in Corrections |
| CJUS | 3800 | Directed Individual Study in Corrections |
| CJUS | 3000 | Topics in Corrections |
| SOCY | 3162 | Social Control |
| SOWK | 2180 | The Field of Social Work |
| SOWK | 3181 | Social Work Process |
| SOWK | 3182 | Social Work Methods |
| PSYC | 3150 | Introduction to Clinical Process |
| CSLG | 3101 | Guidance Behavior and Growth |

**Concentration in Law Enforcement** (12 semester hours)

This concentration is offered for students interested in police work at the federal, state and local levels of government and in private agencies. Requirements include CJUS 3140 Law Enforcement Administration, and nine additional semester hours selected from the following courses or other courses approved by the student's adviser:

| | | |
|---|---|---|
| CJUS | 3141 | Law Enforcement Behavioral Systems |
| CJUS | 3160 | Victims and the Criminal Justice System |
| CJUS | 3400 | Criminal Justice Practicum: Law Enforcement |
| CJUS | 3800 | Directed Individual Study: Law Enforcement |
| CJUS | 3000 | Topics in Law Enforcement |
| SOCY | 3162 | Social Control |
| POLS | 3115 | Civil Rights and Liberties |
| HIST | 3285 | History of Crime and the Police |

**Concentration in Juvenile Justice** (12 semester hours)

This concentration gives students seeking to work with youth an understanding of juvenile delinquency, its impact on society, and the juvenile justice system. Requirements include CJUS 3120 Juvenile Justice Subsystems and nine additional semester hours selected from the following courses or other courses approved by the student's adviser:

| | | |
|---|---|---|
| CJUS | 3121 | Juvenile Law |
| CJUS | 3400 | Practicum in Juvenile Justice |
| CJUS | 3800 | Directed Individual Study in Juvenile Justice |
| CJUS | 3000 | Topics in Juvenile Justice |
| PSYC | 2121 | Adolescent Psychology |
| PSYC | 2112 | Introduction to Behavioral Modification |
| PSYC | 3112 | Consequences and Sources of Behavior Control |
| POLS | 3184 | Decision Making in Public Administration |
| SOCY | 4173 | Juvenile Delinquency |
| SOWK | 3181 | Social Work Process |
| HUSV | 4115 | Effective Human Systems |

**Concentration in Criminal Justice Research, Planning and Evaluation** (12 semester hours)

This concentration is designed to develop the abilities of students interested in careers in criminal justice administration, planning or research. Requirements include CJUS 4200 Problems and Decisions in Criminal Justice and nine additional semester hours selected from the following courses approved by the student's adviser:

| | | |
|---|---|---|
| CJUS | 3400 | Practicum in Criminal Justice Research and Evaluation |
| CJUS | 3800 | Directed Individual Study in Criminal Justice and Evaluation |
| CJUS | 4000 | Topics in Criminal Justice Research |
| POLS | 3210 | Political Measurement (or) |
| SOCY | 3156 | Quantitative Sociological Analysis |
| PSYC | 3140 | Basic Processes in Psychological Assessment |
| CSCI | 1100 | Algorithmic Languages I (or) |
| CSCI | 1101 | Introduction to Computer Concepts |
| MATH | 2111 | Introduction to Operations Research |
| MATH | 2121 | Introduction to Probability |
| POLS | 3230 | Introduction to Survey Research |

**Concentration in General Criminal Justice**

This concentration is available only to those who possess an Associate degree in corrections, law enforcement, or paralegal studies, and is designed to extend their knowledge of the field. Students may satisfy the requirements for the General Criminal Justice Concentration by the completion of 18 semester hours of approved 3000- or 4000-level criminal justice course work.

## SUGGESTED CURRICULUM OUTLINES FOR CRIMINAL JUSTICE MAJORS LEADING TO THE B.S. DEGREE

During the freshman and sophomore years, students majoring in criminal justice should concentrate on general education requirements and the prerequisites for related work required for the major regardless of concentration. (See footnote at bottom of page regarding general education courses.)

### Freshman Year

| | |
|---|---|
| English 1101 ..... 3 | English 1102 ..... 3 |
| Mathematics 1101 ..... 3 | Mathematics Elective (1222 recommended) ..... 3 |
| GOAL III ..... 3 | Natural Science with lab (biology, chemistry, earth sciences or physics) ..... 4 |
| Natural Science with lab (biology, chemistry, earth sciences or physics) ..... 4 | GOAL V ..... 3 |
| CJUS 2100 ..... 3 | Sociology 1101 ..... 3 |
| 13 or 16 | 13 or 16 |

### Sophomore Year

| | |
|---|---|
| Psychology 1101 ..... 3 | Related Work ..... 6 |
| Political Science ..... 3 | Electives ..... 9 |
| Electives ..... 9 | |
| 15 | 15 |

## CORRECTIONS CONCENTRATION

### Junior Year

| | |
|---|---|
| CJUS 3101 Criminal Justice Theory ..... 3 | CJUS 3101 Research Methods ..... 4 |
| CJUS 3151 Insitutional Corrections ..... 3 | CJUS 3101 Lab ..... 0 |
| Related Work ..... 3 | CJUS 3150 Community Corrections ..... 3 |
| Electives ..... 6 | CJUS Elective ..... 3 |
| | Related Work ..... 3 |
| | Elective ..... 3 |
| 15 | 16 |

### Senior Year

| | |
|---|---|
| Corrections Elective ..... 3 | Corrections Elective ..... 3 |
| CJUS Elective ..... 6 | CJUS Elective ..... 3 |
| Related Work ..... 3 | Elective ..... 9 |
| 12 | 15 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## LAW ENFORCEMENT CONCENTRATION

### Junior Year

| | | | |
|---|---|---|---|
| CJUS 3100 CJUS Theory | 3 | CJUS 3101 Research Methods | 4 |
| CJUS 3140 Law Enforcement Administration | 3 | CJUS 3101 Lab | 0 |
| Law Enforcement Elective | 3 | CJUS Elective | 3 |
| CJUS Elective | 3 | Related Work | 3 |
| Elective | 3 | Electives | 6 |
| | 15 | | 16 |

### Senior Year

| | | | |
|---|---|---|---|
| Law Enforcement Elective | 3 | Law Enforcement Elective | 3 |
| CJUS Elective | 3 | CJUS Elective | 3 |
| Related Work | 3 | Related Work | 3 |
| Electives | 6 | Electives | 6 |
| | 15 | | 15 |

## JUVENILE JUSTICE CONCENTRATION

### Junior Year

| | | | |
|---|---|---|---|
| CJ 3100 CJUS Theory | 3 | CJUS 3101 Research Methods in CJUS | 4 |
| CJUS 3120 Juvenile Justice | 3 | CJUS 3101 Lab | 0 |
| Related Work | 3 | Juvenile Justice Elective | 3 |
| Electives | 6 | Related Work | 3 |
| | | Elective | 6 |
| | 15 | | 16 |

### Senior Year

| | | | |
|---|---|---|---|
| Juvenile Justice Elective | 3 | Juvenile Justice Elective | 3 |
| CJUS Electives | 6 | CJUS Electives | 6 |
| Related Work | 3 | Electives | 6 |
| Elective | 3 | | |
| | 15 | | 15 |

## RESEARCH, PLANNING AND EVALUATION CONCENTRATION

### Junior Year

| | | | |
|---|---|---|---|
| CJUS 3100 CJUS Theory | 3 | CJUS 3101 CJUS Research Methods | 4 |
| Research and Planning Elective | 3 | CJUS 3101 Lab | 0 |
| Criminal Justice Elective | 3 | Research and Planning Elective | 3 |
| Electives | 6 | Related Work | 6 |
| | | CJUS Elective | 3 |
| | 15 | | 16 |

### Senior Year

| | | | |
|---|---|---|---|
| CJUS 4200 Problems and Decisions | 3 | Research and Planning Elective | 3 |
| CJUS Elective | 6 | CJUS Elective | 3 |
| Related Work | 3 | Elective | 9 |
| Elective | 3 | | |
| | 15 | | 15 |

## COURSE DESCRIPTIONS

## CRIMINAL JUSTICE (CJUS)

### Courses for Undergraduates

(200) (300) **CJUS 2100. General Criminal Justice. (3)** Components of the criminal justice system reviewed and their interrelatedness assessed; practitioners as professionals discussed; studies of the functions of the system reviewed. *(Fall, Spring, Summer)*

### Courses for Advanced Undergraduates

(301) **CJUS 3100. Criminal Justice Theory. (3)** Prerequisite: junior standing. Theory construction methods; tests of theories; criminological and criminal justice system theory. *(Fall, Spring, Summer)*

(302) **CJUS 3101. Research Methods in Criminal Justice. (4)** Prerequisite: junior standing. Research designs, data collection and data analysis relevant to criminal justice. Three lecture hours and one laboratory period of two hours a week. *(Fall, Spring)*

(449) **CJUS 3102. Ethics and the Criminal Justice System. (3)** Prerequisite: junior standing. Ethical issues in the administration of justice. *(Fall, Spring)*

(439) **CJUS 3110. Criminal Justice and the Law. (3)** Prerequisite: junior standing. Nature, origins and objectives of the criminal sanction. Substantive and procedural law concerning law enforcement, prosecution and corrections. *(Fall, Spring)*

(438) **CJUS 3120. Juvenile Justice Subsystems. (3)** Prerequisite: junior standing. Nature, sources and types of laws regarding delinquency. Juvenile justice as a component of a larger system of juvenile justice. *(Fall, Spring, Summer)*

**CJUS 3121. Juvenile Law. (3)** Prerequisite: junior standing. Statutory and case law relating to juveniles with special emphasis on the North Carolina Juvenile Code. *(Fall, Spring)*

(469) **CJUS 3130. Corrections Administration. (3)** Prerequisite: junior standing. General analysis of organization, methods, systems and procedures, problem solving, resource management, legal framework and planning pertinent to youth and adult correctional agencies and institutions. *(Spring)*

(488) **CJUS 3140. Law Enforcement Administration. (3)** Prerequisite: junior standing. Examination of law enforcement agencies utilizing different organizational and managerial paradigms. Focus on programs that improve the efficiency and effectiveness of law enforcement. *(Fall)*

(489) **CJUS 3141. Law Enforcement Behavioral Systems. (3)** Prerequisite: junior standing. Current issues in law enforcement. Specific topics include: community relations, stress, the use of force, and the effect of culture on law enforcement. *(Spring)*

(478) **CJUS 3150. Community Corrections. (3)** Prerequisite: junior standing. Structure, functions, and effectiveness of community corrections. Emphasis on the deinstitutionalization movement, community-based treatment centers, community service agencies, work release programs and current trends in community corrections. *(Fall)*

(479) **CJUS 3151. Institutional Corrections. (3)** Prerequisite: junior standing. Structure, functions and effectiveness of correctional institutions. Emphasis is on the history of corrections, classification of offenders, institutionalization, treatment programs, juvenile training schools and the future of corrections. *(Fall)*

(437) **CJUS 3152. Correctional Law. (3)** Prerequisite: junior standing. Development, substance and operationalization of the law of corrections. *(Alternate years)*

(448) **CJUS 3160. Victims and the Criminal Justice System. (3)** Prerequisite: junior standing. A consideration of the relationship between victims of crime and the criminal justice system. Specific topics include an analysis of the characteristics of crime victims, victim reporting and nonreporting patterns, treatment of victims by the various segments of the criminal justice system, victim assistance programs and the issue of compensation and/or restitution for victims of crime. *(Spring, Fall)*

(490) **CJUS 3400. Criminal Justice Practicum. (1-6)** Prerequisite: consent of the Department and criminal justice agency, and CJUS 2100. Supervised experience in a criminal justice agency. May be repeated for credit up to a maximum of six total hours. *Pass/No Credit* grading. *(Spring, Fall)*

(495) **CJUS 3800. Directed Individual Study. (1-4)** Prerequisites: junior standing and consent of the Department. Special problems. May be repeated for credit. *(Spring, Fall)*

**Courses for Advanced Undergraduates and Graduate Students**

(499) **CJUS 4000. Topics in Criminal Justice. (1-6) (1-6G)** Prerequisite: consent of the Department. Specialized criminal justice topics. May be repeated for credit. *(Fall, Spring)*

(459) **CJUS 4200. Problems and Decisions in Criminal Justice. (3) (3G)** Prerequisites: junior standing and consent of the Department. Advanced methodological evaluation of criminal justice policy and programs. *(Fall, Spring)*

(621) **CJUS 5103. Program Planning and Evaluation in Criminal Justice. (3) (3G)** Prerequisite: junior standing and consent of the Department. Applied research will be viewed as the foundation for criminal justice planning; distinctions between basic and applied research will be emphasized. Emphasis will be placed on the theoretical bases of planning in general and criminal justice planning in particular. The role of evaluation as it relates to criminal justice programs will be discussed to assist the student in predicting the success or failure of a project or program. *(Alternate years)*

(651) **CJUS 5131. Police Problems and Practices. (3) (3G)** Prerequisite: junior standing and consent of the Department. Consideration will be given to the role and function of police on the operational level. Discretionary decision-making and the legal, social and institutional contexts in which it occurs are also considered. Application of interpersonal and intrapersonal theories and concepts to police problems and practices will be included. *(Alternate years)*

# Department of English

*Chairperson:* Professor Smith
*Professors:* Burne, Carver, Davis, Ellis, Hedges, Mason, Moose, Varnas, Watson
*Associate Professors:* Amante, Frazier, Gatlin, Grey, Harper, Jacoby, McGavran, McNair, Moss, Shapiro, Smedman
*Assistant Professors:* Doheny-Farina, Govan, Hemley, Patten, West
*Lecturers:* Barresi, J. Davis, Deel, Lutz, Nordgren, Swartz, Weiser

A major in English is good preparation for a career in which good communication, a knowledge of people, an awareness of ideas, or clear thinking is important. Of course, in most careers one or more of these abilities is important. Education, law, journalism, medicine and library science are fields traditionally associated with the English major. More and more, however, persons with proficiency in writing, language and literature find increased opportunities in such fields as government, business, banking, museum work, advertising, public relations, sales, publications, printing, radio and television.

By pursuing a double major, students can combine English with political science, business, the arts, history, criminal justice and other majors. These combinations can be satisfying to the student as well as attractive to potential employers.

Graduate school is a possibility after completing the B.A. degree. The English Department offers a Master of Arts degree program (see pages 397-400 for more information), designed to accommodate students seeking the M.A. with or without graduate certification in teaching.

Students who do not major in English but wish to take courses in English, for pleasure or in order to build their skills with language, should consult the Department about the possibility of minoring in English, Journalism or Communication Studies. (See pages 219-220 for information regarding the Communication Studies Program.)

## BACHELOR OF ARTS

A major in English leading to the B.A. degree consists of 30 semester hours of course work in English beyond that used to meet the general education requirement of six hours in English (usually 1101 and 1102). English 2100 is required, and a maximum of six hours of additional 2000-level English courses may be used toward the English major. (Prerequisites for 2000-level courses are English 1101 and 1102, or the equivalent; 1102 may be taken concurrently with a 2000-level course with the consent of the Department.) Requirements above the 2000 level are as follows: at least three hours of English in *each* of the three Group-A categories (pre-1800 British literature; post-1800 British literature; and American literature) and at least three hours in *each* of the five Group-B categories (literary history; genre or mode; major figure; writing; and language). Lists of which courses fit the seven categories will be given to each student who enters the English major and also will be available from English Department advisers and the English Department main office. A single course may be used to satisfy two categories only if one of the two categories comes from Group A and one from Group B. It is recommended that students take a 2000-level English course (for majors, preferably English 2100) prior to enrolling in 3000- or 4000-level literature courses.

The English major also requires nine semester hours of related work beyond the required 30 hours of English and in addition to the work used for the general education requirements. The purpose of the related work is to make connections between the English major and other humanistic studies. Required are: Communication Studies 1101, plus six hours at the 2000 level or above in Performing Arts, Visual Arts, American Studies, Afro-American and African Studies, Philosophy, Humanities, Communication Studies, Foreign Languages, History, Religious Studies, and/or Women's Studies 3101, and/or Arts and Sciences 3400. (The six hours do not have to be from only one department.) Courses from academic areas other than these may be used for the related work requirement, but only with the approval of the Chairperson of the English Department.

**Note:** Whenever a student is admitted to the English major, that status is conditional upon: making at least a *C* average for the first nine hours of English taken at UNCC; and upon making at least a *C* average on the papers written for those courses considered together. If the student has the *C* average on courses but not on papers, he or she may take further work in composition and may qualify fully for the English major if the composition instructor approves. If the above standards are met, the student will be admitted to full status in the English major.

If the grade point average in English courses falls below 2.0 at any time or composition falls below average, there should be a conference between the student and the adviser about continuing to major in English.

**Internships.** Internships in the community and at The University are available for upper-level English majors, Journalism minors, and Communication Studies minors. See Arts and Sciences 3400 and consult the English Department for further information.

**English Department Class Attendance Policy.** Students are expected to attend all scheduled English Department classes. Specific attendance policy for each section is left to the teacher.

**Awards.** The Department gives several undergraduate awards each spring (usually to senior English majors): the Margaret Bryan Award for excellence in scholarship; the English Department Creative Writing Award; the Aristidis Katopodis Award for academic excellence in the study of English; and the Robert M. Wallace Award for excellence in the study of English. Also, each spring the Department awards the Goudes Scholarship to a rising senior English major, for academic excellence and financial need.

## TEACHER CERTIFICATION IN ENGLISH

Students seeking **secondary teacher certification** must meet all the requirements of the English major. Such students should consult with their adviser in the College of Education and Allied Professions regarding education courses required for certification.

*Student Teaching.* Additional requirements that must be met before students are allowed to do student teaching include: at least a 2.75 GPA for English courses above the 1000 level taken at UNCC and at least a 2.75 GPA for all courses taken at UNCC; submission of a writing sample; and, in addition to ENGL 2100, at least 24 hours of work in English above the 1000 level. *Students should consult the Department early in their careers regarding these requirements.*

Students seeking **intermediate teacher certification** must major in Education. However, the Department of English offers a concentration in language and literature which the student may elect.

A program for certification in teaching **English as a Second Language (ESL)** also is available.

## HONORS PROGRAM IN ENGLISH

The English Honors Program offers a program of study for English majors and courses for nonmajors in the Interdisciplinary Honors program or simply pursuing an interest in English honors work.

*Admission.* Admission into the program or a course requires the approval of the English Department Honors Committee.

*Courses.* Junior-level honors topics courses are offered which are appropriate for nonmajors and majors who meet the course prerequisites. A Senior Honors Seminar and Senior Honors Colloquium (which includes a special project equivalent to a thesis) are offered primarily for majors in English.

*Certification Requirements.* To graduate with honors in English, a student must complete English Junior Honors Topics I and II, and the Senior Honors Seminar and Senior Honors Colloquium.

## COURSE DESCRIPTIONS

### ENGLISH (ENGL)

(100) **ENGL 1100. English As A Foreign Language. (3)** Limited to students whose native language is not English who may need additional preparation for their regular academic work, primarily composition. Does not count toward an English major nor toward the general education requirement. One may not register for ENGL 1100 before taking the English Department's placement test for persons whose primary language is not English. *(Fall, Spring)*

(101) **ENGL 1101. English Composition. (3)** Extensive practice in and discussion of composition in various forms, for different purposes, and for various audiences. Students experience writing as a means of personal growth, intellectual development, and communication. *(Fall, Spring, Summer) (Evenings)*

(102) **ENGL 1102. Composition and Literature. (3)** Prerequisite: ENGL 1101. Combined practice in writing and the study of literature. Students become more independent and competent writers, more acute thinkers, and more critical readers of at least two genres of literature. *(Fall, Spring, Summer) (Evenings)*

**ENGL 1101 and 1102 are prerequisites for all other English courses.**

(214) **ENGL 2014. Topics in Writing. (1-3)** Offers instruction and practice in special types of writing, such as research or legal writing, which are not included in other writing courses. In addition, some sections may be designed for students who need strengthening of composition skills, or may offer instruction in various aspects of effective writing. English 2014 *may not be used* toward the requirements for the English major. The *maximum hours of credit* allowed are six for English 2014 or 2015, or for 2014 and 2015 together. *(On demand)*

(215) **ENGL 2015. Topics in Writing. (1-3)** Offers instruction and practice in special types of writing, such as writing for publication (exclusive of poetry, drama and fiction), which are not included in other writing courses. In addition, some sections may offer instruction in various aspects of effective writing. *Not more than* three hours of 2015 may be used toward the requirements for the English major (and those three hours may not be used toward fulfillment of the 12 hours of English language or composition required for certification in English). The *maximum hours of credit* allowed for any student are six for English 2015 or 2014, or for 2015 and 2014 together. *(On demand)*

(250) **ENGL 2050. Topics in English. (3)** Designed to offer topics of general interest not included in other courses. May be repeated for additional credit with the approval of the English Department. Does not count toward the English major. *(Yearly)*

(200) **ENGL 2100. Approaches to Literature. (3)** Introductory study and application of major critical approaches to literature, such as historical, psychological, mythological and formalistic. *Required of English majors* and highly recommended as the first post freshman-level course for the English major. *(Fall, Spring)*

(201) **ENGL 2101. Masterpieces of British Literature I. (3)** An introduction to British Literature written before 1800, the course also provides backgrounds in the society and culture of the Middle Ages, the Renaissance, and the Age of Reason. *(Fall)*

(202) **ENGL 2102. Masterpieces of British Literature II. (3)** An introduction to masterpieces of British Literature written since 1800, the course also provides backgrounds in the society and culture of the Romantic, Victorian and Modern periods. *(Spring)*

(203) **ENGL 2103. Masterpieces of Modern Fiction. (3)** Readings in selected novels and short stories written since 1850. *(Fall, Spring, Summer) (Evenings)*

(204) **ENGL 2104. Major American Writers. (3)** Introductory readings in six to eight authors, approximately half from the 19th century and half from the 20th century, both poetry and prose. *(Yearly)*

(205) **ENGL 2105. Introduction to Poetry. (3)** Representative poems and poets, drawn from several literary periods that introduce students to several poetic genres, to varied treatments of universal themes (such as love, death, disappointment, joy) and to various ideas about poetic imaginations. *(Yearly)*

(206) **ENGL 2106. Film Criticism.** (4) Introduction to film as an art form. Emphasis will be on critical theory and on critical analysis of the form and the content of different kinds of films—e.g., the narrative film, the silent film, the documentary film, etc.—drawn from the international cinema. Students will apply critical theory to the analysis of professionally made films and will have the option of making their own short films. A viewing lab is required. *(Fall, Spring)*

(208) **ENGL 2108. Introduction to Drama.** (3) Representative plays of the western world from the classical period to the modern period to introduce students to drama as literature, with consideration of staging, conventions of the theatre, types of drama, and dramatic theory. *(Alternate years)*

(211) **ENGL 2111. Masterpieces of World Literature I.** (3) Readings in Greek, Latin, and Eastern poetry and prose, in translation into English. The genesis of literature in myth, in Eastern religion, and in the Bible, and the development of Greek and Roman literature. *(Fall)*

(212) **ENGL 2112. Masterpieces of World Literature II.** (3) Readings in Medieval, Renaissance and Modern European literature, in translation into English. Social and literary changes in the Reformation and Renaissance, the beginnings of new modes of thought in the Age of Enlightenment, and other scientific, literary, religious, philosophical and social changes up to the modern period. *(Spring)*

(216) **ENGL 2116. Introduction to Technical Communication.** (3) Technical Communication theory (such as organization, audience analysis, and editing) is taught in the context of oral and written formats, such as memoranda, proposals, and reports, and includes formats and content common to students' own disciplines. For general elective credit only. *(Fall, Spring)*

(226) **ENGL 2126. Introduction to Creative Writing.** (3) This course introduces students to creative writing, including both poetry and fiction writing, assuming little or no previous creative writing experience. *(Fall, Spring)*

(232) **ENGL 2132. Introduction to Contemporary American English.** (3) An introduction to the study of the sound system and structure of contemporary American English, including characteristics and applications of traditional grammar. *(On demand)*

(218) **ENGL 2160. Introduction to Journalism.** (3) Introduction to the basics of news reporting, interviewing, and feature writing, with emphasis on development of news writing skills, field experience, and media ethics. (May not be used for English major requirements.) *(Fall, Spring)*

(350) **ENGL 3050. Topics in English.** (3) Special topics not included in other courses. May be repeated for additional credit with approval of the English Department. *(Fall, Spring)*

(390) **ENGL 3090. Major Authors.** (3) The works, ideas and life of one to three significant authors. With permission of the English Department, may be repeated once for credit as long as the figures treated differ. *(Fall, Spring)*

(303) **ENGL 3103. Children's Literature.** (3) Critical and historical study of children's literature, including picture books, poetry, myth, fable, folk tale, fantasy, and realistic fiction. Central to the course is development of critical principles for assessing the literary merit of children's books. Other possible emphases: the creative process; archetypes and values in the works studied; images of childhood; children's responses to literature; and issues in children's book selection.* *(Fall, Spring)*

(304) **ENGL 3104. Literature for Adolescents.** (3) Introduction to literature for adolescents. Emphases are: (1) critical analysis and aesthetic judgment of literature; (2) study of representative examples from all major genres (poetry, fiction and drama) as well as various sub-genres (such as biography, science fiction, fantasy, and contemporary realistic juvenile fiction) which address the cognitive, emotional and psychological needs of junior high and high school students. Students will practice applying these approaches to adolescent literature and will employ these concepts in critically selecting, evaluating and judging books for adolescents.* *(Yearly)*

(313) **ENGL 3113. Milton.** (3) A study of the major poems and selections from the minor works of Milton. *(Alternate years)*

**At least one of these courses is required for English majors seeking intermediate teacher certification.*

(316) **ENGL 3116. Shakespeare's Early Plays. (3)** A study of 10 representative plays from the comedies, histories and tragedies written 1590-1600. *(Fall, Spring)*

(317) **ENGL 3117. Shakespeare's Late Plays. (3)** A study of 10 representative plays from the period 1600-1611, including the late tragedies and tragi-comedies. *(Fall, Spring)*

(323) **ENGL 3123. Wit and Sensibility: 18th-Century British Literature. (3)** Poetry and prose in the golden age of satire, with emphasis on Dryden, Pope, Swift and Johnson. Early Romantic trends in the poetry of Young, Grey, and Collins. *(Alternate years)*

(325) **ENGL 3125. The Romantic Era, 1785-1832. (3)** The development of the Romantic movement, with emphasis on the works of Wordsworth, Coleridge and other major poets. *(Yearly)*

(326) **ENGL 3126. The Victorian Era to 1870. (3)** Readings in British literature of the middle of the 19th century, reflecting such cultural developments as the rise of industrialism and technology, England's global empire, the rapidly changing nature of society, the religious crisis, and the beginnings of artistic and literary revolt against the establishment. *(Yearly)*

(327) **ENGL 3127. British Literature from 1870 to World War I. (3)** Readings emphasizing such cultural and literary developments as realism and the impact of science, art for art's sake, problems of religious faith and of sexuality, moral and political issues relating to colonialism, British imperialism, and new techniques in art and literature. *(Yearly)*

(328) **ENGL 3128. British Literature Since World War I. (3)** Readings reflecting developments such as the decline of Britain as a world power, the intellectual disillusionment following World War I, the impact of psychological and social theory, and literary innovation and experimentation. *(Alternate years)*

(341) **ENGL 3141. American Literature of the Romantic Period, 1820-1870. (3)** Important writers and ideas of the period of American romanticism, from Irving through Whitman, including such authors as Poe, Emerson, Thoreau, Hawthorne, Melville. *(Yearly)*

(342) **ENGL 3142. American Literature of the Realistic and Naturalistic Periods, 1870-1920. (3)** Important writers and ideas of American literature from Whitman through the period of World War I, including such authors as Dickinson, Twain, Howells, James, Crane, Dreiser, Frost. *(Yearly)*

(343) **ENGL 3143. Modern American Literature, 1920 to Present. (3)** Important writers and ideas of modern American literature, including such authors as Faulkner, Eliot, Hemingway, Cummings. *(Yearly)*

(344) **ENGL 3144. The American Novel of the 19th Century. (3)** Major novelists and traditions from the beginnings of the American novel through the rise of realism, including such novelists as Hawthorne, Melville, Twain, Howells, James. *(Alternate years)*

(345) **ENGL 3145. The American Novel of the 20th Century. (3)** Major novelists and traditions from the emergence of naturalism to the present, including such novelists as Crane, Dreiser, Hemingway, Faulkner. *(Yearly)*

(346) **ENGL 3146. Contemporary Jewish-American Literature. (3)** An introduction to the scope and shape of the contemporary Jewish-American literary tradition. Such writers as Bellow, Malamud, Roth, Singer, and Potok will be studied. *(Alternate years)*

(347) **ENGL 3147. Early Black American Literature. (3)** A survey of significant writings by black Americans before the Harlem Renaissance. *(Alternate years)*

(348) **ENGL 3148. Twentieth-Century Black American Literature: Prose. (3)** Intensive study of selected black American 20th-century writers of fiction and nonfiction, beginning with the Harlem Renaissance. *(Alternate years)*

(349) **ENGL 3149. Twentieth-Century Black American Literature: Poetry and Drama. (3)** Intensive study of selected black American 20th-century writers of poetry and drama, beginning with the Harlem Renaissance and including the Black Arts Movement. *(Alternate years)*

(355) **ENGL 3155. American Folklore. (3)** Introduction to the nature of folklore. Emphasis on literary folklore, including myths, legends, ballads, songs, tall tales, hero tales and ghost stories. (Does not satisfy the American literature requirement for English majors.) *(Alternate years)*

(356) **ENGL 3156. American Indian Literature. (3)** Survey of American Indian literature, ranging from the oral tradition to the poems and novels of contemporary writers (including such writers as N. Scott Momaday, James Welch, and Leslie M. Silko). *(On demand)*

(318) **ENGL 3160. News Writing. (3)** Prerequisite: ENGL 2160 or permission of instructor. Journalistic news writing with emphasis on reporting for newspapers. Students write news stories about events occuring during the semester. Examination of historical, legal and ethical aspects of the American press. *(Fall)*

(319) **ENGL 3161. News Editing. (3)** Prerequisite: ENGL 2160 or permission of instructor. Basic studies in selection, preparation and presentation of news, with primary emphasis on newspapers. Examination of the effects of competition in multimedia news markets. Emphasis on issues of ethics, fairness and accuracy in news coverage, including a review of legal guidelines affecting news presentation. *(Spring)*

(361) **ENGL 3761. Junior Honors Topics I. (3)** Prerequisite: permission of the English Department Honors Committee. Literary exploration of timeless issues faced by the individual through the ages. Readings from several genres and several literary periods. *(Fall, Spring)*

(362) **ENGL 3762. Junior Honors Topics II. (3)** Prerequisites: ENGL 3761 or permission of the English Department Honors Committee. Literary explorations of the effects of society upon the individual. Readings from several genres and several literary periods. *(Spring)*

(471) **ENGL 3771. Senior Honors Seminar. (3)** Prerequisites: ENGL 3762 or permission of the English Department Honors Committee. Critical study of a single literary mode or genre. *(Fall)*

(472) **ENGL 3772. Senior Honors Colloquium. (3)** Prerequisite: ENGL 3771 or permission of the English Department Honors Committee. Ideas and their communication, through an intensive study of an author, a movement, or an artistic form. Individual research leading to a significant paper to be shared with the class. *(Spring)*

(352) **ENGL 3852. Independent Study. (1-3)** Prerequisite: consent of the Department. Individual investigations and appropriate exposition of the results. (Unless special permission is granted by the Department Chair, no more than six hours of 3852 may apply toward the English major.) May be repeated for additional credit with approval of the English Department. *(Fall, Spring, Summer)*

**Courses for Undergraduates and Graduate Students**

In courses at this level, graduate students will be expected to do additional work beyond that required of undergraduates.

(402) **ENGL 4002. Women and Literature. (3) (3G)** Selected topics focusing on women and literature, such as images of women, women as writers, and women as literary critics. With permission of the English Department, may be repeated for credit as topics vary. (However, only six hours may be used for the requirements for the English major.) *(Yearly)*

(408) **ENGL 4008. Topics in Advanced Technical Communication. (3) (3G)** Prerequisites: ENGL 2116 and COMM 1101 or equivalents. Exploration, both theoretically and practically, of the interrelation of written, oral and graphic communication within technical rhetorical contexts. May be repeated once for additional credit with the approval of the English Department. *(On demand)*

(412) **ENGL 4112. Medieval British Literature. (3) (3G)** Representative works (excluding those of Chaucer) written in Britain during the Middle Ages, especially the epic and romance, mainly studied as reflections of the medieval individual's relationship to God, society and other individuals. An introduction to the earliest British literature as it evolved from pagan folklore under the influence of myth, fantasy, courtly convention, the new religion, foreign invasion, and transformations in language and culture. Most of the works studied in this course will be translated into modern English. *(On demand)*

(413) **ENGL 4113. British Prose and Poetry of the 16th Century. (3) (3G)** Major works of the Renaissance "Golden Age," including Sidney, Marlowe, Shakespeare (excluding drama). Included are satire, the pastoral romance in prose, and the many new poetic forms that continue to the present day, such as the sonnet and blank verse. *(On demand)*

(421) **ENGL 4121. The 18th-Century British Novel: Man, Woman, Manners and Morals. (3) (3G)** The novel as narrative form and as mirror of the individual in society. Emphasis on fiction by Defoe, Richardson, Fielding, Sterne, Austen, with further readings in the novel of manners and the Gothic romance. *(Alternate years)*

(422) **ENGL 4122. The Victorian Novel. (3) (3G)** Readings in British fiction during the triumph of the novel in the 19th century, emphasizing major developments in realism, romance, naturalism. *(Alternate years)*

(423) **ENGL 4123. The Modern British Novel. (3) (3G)** Representative British novels that embody the cultural and literary developments of the 20th century: the impact of two world wars, the influence of important psychological and economic factors of modern life and their relationships to new techniques in art and literature. *(Alternate years)*

(424) **ENGL 4124. Modern Irish Literature. (3) (3G)** Readings in Irish literature since 1885, with consideration of the mythology, folklore, and social history of Ireland as they are expressed in poetry, drama and fiction. *(Yearly)*

(431) **ENGL 4131. British Drama to 1600, Excluding Shakespeare. (3) (3G)** A survey of the development of British drama to 1600, with representative plays from the Mystery-Miracle Cycles, the Morality Plays, and Tudor drama, including Lyly, Kyd, Marlowe, Peele, Greene, Dekker. *(On demand)*

(432) **ENGL 4132. British Drama from 1600-1642, Excluding Shakespeare. (3) (3G)** A survey of Jacobean and Caroline drama, including plays by Jonson, Beaumont and Fletcher, Webster, Middleton, Shirley, Ford. *(Alternate years)*

(433) **ENGL 4133. British Drama of Wit and Intrigue, 1660-1780. (3) (3G)** The famous bawdy comedy of manners and the heroic drama of the Restoration, followed by the sentimental comedy and satiric burlesque of the 18th century. *(Alternate years)*

(441) **ENGL 4141. Colonial and Early American Literature. (3) (3G)** Origins of American literature, from Colonial times to Washington Irving, including such authors as Edwards, Taylor, Franklin, Crevecoeur, Freneau, Brown. *(Alternate years)*

(445) **ENGL 4145. Literature of the American South. (3) (3G)** Selected works of Southern writers which reflect literary and cultural concerns from Colonial times to the present, including such authors as Poe, the early humorists, local color writers, Chopin, Faulkner, Warren, O'Connor, Welty. *(Yearly)*

(450) **ENGL 4150. Contemporary Poetry. (3) (3G)** Poetry in English (including translations) since 1940. *(On demand)*

(451) **ENGL 4151. Modern Drama. (3) (3G)** Representative Continental, British, and American plays, from Shaw to the present. *(Alternate years)*

(452) **ENGL 4152. Modern European Literature. (3) (3G)** Selected modern European authors, translated into English, whose works have been of special interest to readers and writers of British and American literature. *(Alternate years)*

(453) **ENGL 4153. Contemporary Fiction. (3) (3G)** Selected present-day fiction, with an emphasis upon works from outside the United States and Britain. Works not originally in English will be studied in translation. *(Alternate years)*

(455) **ENGL 4155. Pan-African Literature. (3) (3G)** Introduction to significant Pan-African literature, emphasizing the oral tradition, selected works of major authors in the Caribbean and Africa, and the relationships of these traditions to American, British and other literary traditions. Works not originally written in English will be studied in translation. *(On demand)*

(461) **ENGL 4161. Modern English Grammar. (3) (3G)** A study of the structure of contemporary English, with an emphasis on descriptive approaches. *(Yearly)*

(465) **ENGL 4165. Language and Culture. (3) (3G)** Readings in and discussion and application of the interrelationships between language and culture, including basic introduction to contemporary American dialects and to social contexts of language. *(Yearly)*

(466) **ENGL 4166. Comparative Language Studies for Teachers. (3) (3G)** Prerequisite: ENGL 2132, or ENGL 6161, or permission of the Department. An introductory course designed to aid the teacher of English as a Second Language in comparing the systems of sound and structure of another language with those systems in English. *(Yearly)*

(470) **ENGL 4170. Approaches to Teaching English. (1-3) (1-3G)** This course presents various approaches to the teaching of English, including recent theories and research related to literary study. Designed primarily for teaching in grades 7-12. *(Yearly)*

(601) **ENGL 4199. Bibliography and Methodology. (3) (3G)** Introduction to the scope, aims, materials and methods of literary scholarship, including criticism. *(On demand)*

(307) **ENGL 4202. Writing Poetry. (3) (3G)** Prerequisite: ENGL 2126, or graduate student status, or permission of instructor. Further study of and practice in the writing of poetry within a workshop format. *(Fall, Spring) (Evenings)*

(308) **ENGL 4203. Writing Fiction. (3) (3G)** Prerequisite: ENGL 2126, or graduate student status, or permission of instructor. This course provides further study of and practice in the writing of fiction within a workshop format. *(Fall, Spring) (Evenings)*

(305) **ENGL 4204. Expository Writing. (3) (3G)** Writing of essays, criticism and various forms of exposition. *(Fall, Spring) (Evenings)*

(406) **ENGL 4205. Advanced Expository Writing. (3) (3G)** Prerequisite: ENGL 4204. May be repeated once for credit with permission of the English Department. *(Alternate years)*

(405) **ENGL 4207. Writing Workshop. (3) (3G)** Prerequisite: ENGL 4202, 4203, or permission of instructor. May be repeated once for credit with the consent of the English Department. *(Fall, Spring) (Evenings)*

(301) **ENGL 4210. Greek and Roman Drama In Translation. (3) (3G)** A study of selected plays of Aeschylus, Sophocles, Euripides, Aristophanes, Plautus, Terence, and Seneca with emphasis on dramaturgy and the development of the Greek and Roman theater. *(On demand)*

(311) **ENGL 4211. Chaucer. (3) (3G)** The poetry of Geoffrey Chaucer, including *The Canterbury Tales* and *Troilus and Criseyde. (Alternate years)*

(321) **ENGL 4221. The Earlier 17th Century. (3) (3G)** Major writers from Bacon and Donne to the Restoration. *(On demand)*

(351) **ENGL 4251. Literary Criticism Through Arnold. (3) (3G)** The major schools and critics of literary criticism. *(On demand)*

(401) **ENGL 4252. Modern Literary Criticism. (3) (3G)** Theories of the modern schools of criticism. *(On demand)*

(331) **ENGL 4260. History of the English Language. (3) (3G)** Origins and development of the English language, both spoken and written, from its earliest forms to contemporary usage. *(Yearly)*

(333) **ENGL 4263. Linguistics and Language Learning. (3) (3G)** Readings in, discussions of, and application of linguistically oriented theories of language acquisition, directed toward gaining an understanding of language-learning processes and stages. *(Alternate years)*

(400) **ENGL 4400. English Composition Practicum. (1-3) (1-3G)** Prerequisite: consent of the instructor. Through supervised tutorial experience and seminars, this course introduces the student to current developments concerning composition and to a variety of methods for teaching English composition. This course is highly recommended for those planning to teach or those currently engaged in teaching. With permission of the English Department may be repeated once for credit. *(Fall, Spring)*

# Department of Foreign Languages

*Chairperson:* Associate Professor Gleaves
*Professors:* Gabriel, Saman, Suther
*Professors Emeritus:* Bush, Macy, Slechta, Turner
*Associate Professors:* Cernyak, Hopper, Merrill, Miller, Park, Reimer, Rose, Vance
*Associate Professor Emeritus:* Hoyle
*Assistant Professors:* Lezcano, McLeod
*Lecturers:* Sandarg, Shaul, Stephenson

The Department of Foreign Languages has designed its programs to develop language skills and to provide insights into foreign cultures through the study of language, culture and literature.

The Department offers the Bachelor of Arts degree with majors in French, German and Spanish. It also offers minors in the same languages, as well as a Certificate in Translating. Courses in Russian are offered regularly, and courses in Arabic, Chinese, Greek, Hebrew, Italian, Japanese, Latin and Portuguese are offered on a limited basis, according to demand.

Students interested in foreign language study are encouraged to investigate the following options: (1) a single major in French, German or Spanish, based on the standard liberal arts model, with or without teaching certification; (2) a double major in a foreign language and another discipline or in two languages; (3) a foreign language minor; (4) an unofficial concentration in one or more languages to complement a major in another academic area; and (5) a concentration in translating.

Foreign language students may become certified to teach French, German or Spanish. Career opportunities for students who gain proficiency in one or more languages exist in education, business, government, industry, the military, nursing and social work. Courses in Business French, German and Spanish and the four-semester Concentration in Translating are especially helpful for those who want to use a foreign language in the world of business and commerce.

**Summer Scholarships and Study Abroad.** Scholarships for summer study and employment abroad are available to students of French, German and Spanish. As a rule, applicants are not required to major in language to be eligible, but they must have completed at least two years of study in the language they propose to use abroad. For detailed information, see scholarship coordinators in the Department of Foreign Languages.

## BACHELOR OF ARTS

**General Requirements for All Majors.** All students are required to fulfill general education requirements as listed under the Goals of UNCC Education, pages 73-77 in this *Catalog,* in addition to course work specified below.

**Placement.** The Department of Foreign Languages will recommend the placement of students on a level commensurate with their demonstrated competence at the time of enrollment and considering their previous language training or experience. Placement exams (not to be confused with the Foreign Language Proficiency Exams) are usually given at the beginning of the fall and spring semesters.

**Laboratory and Practicum.** In addition to meeting for three hours of class, all students of modern foreign languages at the 1000 and 2000 levels are required to attend a laboratory or practicum two hours per week. Instructors in other courses may also assign laboratory work.

**Teacher Certification.** The student seeking certification to teach in secondary schools must fulfill the general education requirements, take 24-30 hours in the language specialty, FORL 4200, and all courses required for certification by the College of Education and Allied Professions.

**FRENCH.** The French major offers three options:

A. The French major leading to the B.A. degree consists of FREN 2201, 2202, 2207, 3201, 3202, 3203, 3209, 4201, 4202 and at least two additional courses at the 4000 level. Related work is to be approved by the Department.

B. The French major leading to a B.A. degree with secondary school teaching includes the same course as option "A" and in addition FORL 4200, Methods of Teaching a Second Language, and

all courses required for certification by the College of Education and Allied Professions. Candidates for a degree with certification in elementary teaching may take option "C," plus FORL 4200.

C. The modified French major leading to a B.A. degree consists of FREN 2201, 2202, 2207, 3201, 3202, 3203, 3209, 4201 and 4202. This option is suggested for double majors.

**GERMAN.** A major in German leading to a B.A. degree consists of GERM 2201, 2202, 3201, 3202, 3030, 3050 (two courses under different topics), 4203 or 4204, 4010 or 4020, or an additional course on the 3000 or 4000 level. German majors must enroll for one hour of GERM 4050 for each GERM 3230 or 3050 course they take. In addition, 15 hours of related work (or a declared minor), to be approved by the German language staff, will be required. The program of courses for candidates for teacher certification will be the same as above with requirements specified by the College of Education and Allied Professions.

Students majoring in German and seeking a Certificate in Translating in German must take the courses listed above for a B.A. in German, but may eliminate one GERM 3000 and one GERM 4000 course. They must also take TRAN 3271, 3272, 3273 and 3274.

**SPANISH.** A major in Spanish leading to the B.A. degree consists of SPAN 2201, 2202, 3201, 3202, 3203, 3209 or 3210, and 3212, plus 12 hours of Spanish courses on the 4000 level.

## FOREIGN LANGUAGE MINOR

**FRENCH.** A minor in French consists of 23 hours above the 1202 level, as follows: FREN 2201, 2202, 2207, 3202, 3203 and 3209. Students who wish to take Commercial French (FREN 2205) and count it toward the minor may do so by substituting Commercial French for FREN 2207, 3203 or 3209.

**GERMAN.** A minor in German consists of GERM 2201, 2202, 3201, 3202, and six additional hours of 3000- or 4000-level German courses, for a total of 20 hours. A student who waived GERM 2201 and/or 2202 must take the equivalent number of GERM 3000- or GERM 4000-level courses.

**SPANISH.** A minor in Spanish consists of SPAN 2201, 2202 or 2210, 3201 or 3202, 3203 or 3212, 3209 or 3210, and six additional hours at the SPAN 3000 or SPAN 4000 level, for a total of 23 hours. The student who is waived from SPAN 2201 must take at least one additional course at the SPAN 3000 or SPAN 4000 level.

## CERTIFICATE IN TRANSLATING

Successful completion of TRAN 3271, 3272, 3273 and 3274 entitles the student to a Certificate in Translating. This certificate is not equivalent to a major in a foreign language, but it represents a skill developed at the bachelor's degree level. The Certificate in Translating may be taken in conjunction with a major in any field. All courses in this sequence involve translating into English from the source language.

## COURSE DESCRIPTIONS

### FOREIGN LANGUAGES—GENERAL

The following languages are offered on demand at the beginning level (1201 and 1202) and the intermediate level (2201 and 2202), with variable credit of 3-4 hours: Arabic (ARBC), Chinese (CHNS), Greek (GREK), Hebrew (HBRW), Italian (ITLN), Japanese (JAPN), Latin (LATN), and Portuguese (PORT). The number of hours credit for each course (3-4) is determined by the necessity or availability of a lab program.

(101) **1201. Elementary Foreign Language. (3-4)** Prerequisite: permission of the Department. Fundamentals of grammar and phonetics, reading, writing and conversation.

(102) **1202. Elementary Foreign Language. (3-4)** Prerequisite: FORL 1201 or permission of the Department. Continuation of FORL 1201.

(201) **2201. Intermediate Foreign Language. (3-4)** Prerequisite: FORL 1202 or permission of the Department. Review grammar, conversation, composition and readings based on the culture and civilization.

(202) **2202. Intermediate Foreign Language. (3-4)** Prerequisite: FORL 2201 or permission of the Department. Review grammar, conversation, composition and readings based on students' needs.

### FOREIGN LANGUAGES—SPECIAL TOPICS (FORL)

(350) **FORL 3050. Topics in Language, Literature and Culture. (3)** Studies in a selected field of interest. May be repeated for credit. *(On demand)*

(400) **FORL 4200. Methods of Teaching a Second Language. (3) (3G)** Prerequisite: junior standing or permission of the Department. Current trends and practices of second language teaching, with special emphasis on practical applications. Required for certification in the teaching of a foreign language and recommended for certification in teaching English as a Second Language. *(On demand)*

### CERTIFICATE IN TRANSLATING (TRAN)

(371) **TRAN 3271. Introduction to Translating. (3)** Prerequisite: completion through 2202 level of one language other than English, or equivalent. History and present practice of translating: difference between translating and interpreting; psychological differences among speakers of different languages; patterns of language development; non-verbal language; levels of language; theories of translating; demonstrations of interpreting; career options, professional associations and their functions; sources of employment information. *(Fall) (Alternate years)*

(372) **TRAN 3272. Elementary Translating. (3)** Prerequisites: native fluency in English and completion through 2202 level of source language, or equivalent. TRAN 3271 is required for students taking the Certificate sequence, and is strongly recommended for any others who wish to take TRAN 3272. Comparative analysis of translated texts; questions of restructuring texts and adding or subtracting material; style/audience relationship; simple translations from source language to English; sight translation. *(Spring) (Alternate years)*

(471) **TRAN 3273. Intermediate Translating. (3)** Prerequisite: successful completion of TRAN 3272. Critical analysis of different kinds of English texts and of texts translated into English; translations for specific audiences; problems of terminology; history and theories of translating; development of working dictionaries in field of specialization; investigation of employment opportunities. *(Fall) (Alternate years)*

(472) **TRAN 3274. Advanced Translating. (3)** Prerequisite: successful completion of TRAN 3273. Study of professional journals in the field of translation; specific problems of source/target language equivalents; expansion of working dictionaries; oral reports on work in progress; translating of substantial text(s) in field of specialization. Texts may be scientific, technical, commercial, scholarly or literary, depending on field of specialization, but in all cases will be works that have not been adequately translated before. *(Spring) (Alternate years)*

## COURSE DESCRIPTIONS

### FRENCH (FREN)

**Courses for Undergraduates**

(150) **FREN 1050. Special Approaches to the Study of French. (1-6)** Course may be repeated with change of topic. *(On demand)*

(101) **FREN 1201. Elementary French I. (3)** Corequisite: FREN 1201L. Introduction to the sounds and structure of the French language with emphasis on vocabulary and the skills of listening, speaking, reading, and writing. *(Fall, Spring, Summer) (Evenings)*

(101L) **FREN 1201L. Elementary French Practicum. (1)** Corequisite: FREN 1201. Active use of French language skills. Two hours per week. *(Fall, Spring, Summer) (Evenings)*

(102) **FREN 1202. Elementary French II. (3)** Prerequisites: FREN 1201 and 1201L, or permission of the Department. Corequisite: FREN 1202L. Continuation of FREN 1201. Three class hours per week. *(Fall, Spring, Summer) (Evenings)*

(102L) **FREN 1202L. Elementary French Practicum. (1)** Corequisite: FREN 1202. Active use of French language skills. Two hours per week. *(Fall, Spring, Summer) (Evenings)*

(250) **FREN 2050. Topics in French. (1-3)** Course may be repeated with change of topic. *(On demand)*

(201) **FREN 2201. Intermediate French I. (4)** Prerequisites: FREN 1202 and 1202L, or permission of the Department. Review of French grammar with conversation and composition based on selected readings. Three class hours and two lab hours per week. *(Fall, Spring)*

(202) **FREN 2202. Intermediate French II. (4)** Prerequisites: FREN 2201 and 2201L, or permission of the Department. Conversation and composition based on readings in French literature and culture. Film and slide presentations. Three class hours and two lab hours per week. *(Fall, Spring)*

(205) **FREN 2205. Commercial French. (3)** Prerequisite: FREN 1202 or equivalent, or permission of the Department. A study of the structure and phraseology of French business letters as well as routine messages and communications. Emphasis on commercial, banking, and telecommunication terminology. *(Spring)*

(207) **FREN 2207. French Phonetics. (3)** Prerequisites: FREN 1202 or permission of the Department. Study of the sounds of the French language, their production and representation by means of the International Phonetic Alphabet. Practice in reading and speaking with proper rhythm and intonation. *(Fall)*

(209) **FREN 2209. French Civilization. (3)** Conducted in English. No knowledge of French required. Open to majors or non-majors for elective credit. A study of the French people, past and present, with emphasis on cross-cultural contrasts in attitudes and values. *(On demand)*

(350) **FREN 3050. Topics in French. (1-3)** Course may be repeated with change of topic. *(On demand)*

(301) **FREN 3201. French Grammar and Conversation. (3)** Prerequisite: FREN 2202 or permission of the Department. Review of French grammar and guided conversation on prepared topics. Emphasis on spoken French. *(Fall)*

(302) **FREN 3202. French Grammar and Composition. (3)** Prerequisites: FREN 2202 and 2207 or concurrent enrollment in FREN 2207. FREN 3201 recommended. Review of French grammar and guided compositions on prepared topics. Emphasis on vocabulary, idiomatic expressions, and stylistics. *(Spring)*

(303) **FREN 3203. Introduction to French Literature. (3)** Prerequisites: FREN 2207 and 3201, or permission of the Department. Development of techniques for literary study through analysis of selected major works in French literature. Readings, discussions, presentations, and *explications de texte. (Alternate years)*

(309) **FREN 3209. French Culture and Civilization. (3)** Prerequisite: FREN 3201 or permission of the Department. France since the 19th century and cross-cultural views of France and America. Special attention to contemporary France. *(Alternate years)*

**Courses for Advanced Undergraduates and Graduate Students**

Additional work required for graduate credit.

(403) **FREN 4003. Studies in French Literature. (3) (3G)** Prerequisite: FREN 3203, or permission of the Department. Course may be repeated with change of topic. *(On demand)*

(405) **FREN 4005. Studies in the French Language. (3) (3G)** Prerequisites: FREN 3201 and 3202, or permission of the Department. Course may be repeated with change of topic. *(On demand)*

(407) **FREN 4007. Studies in French Culture and Civilization. (3) (3G)** Prerequisites: FREN 3201, 3202, and 3209, or permission of the Department. Course may be repeated with change of topic. *(On demand)*

(401) **FREN 4201. Survey of French Literature I. (3) (3G)** Prerequisite: FREN 3203. Prerequisite or corequisite: FREN 3209. The major literary movements from the Middle Ages to the Enlightenment, with sample texts. Emphasis on continuity and change. *(Alternate years)*

(402) **FREN 4202. Survey of French Literature II. (3) (3G)** Prerequisite: FREN 3203. Prerequisite or corequisite: FREN 3209. The major literary movements from the Enlightenment to the contemporary period, with sample texts. Emphasis on continuity and change. *(Alternate years)*

## COURSE DESCRIPTIONS

### GERMAN (GERM)

**Courses for Undergraduates**

(101) **GERM 1201. Elementary German. (3)** Corequisite: GERM 1201L. Fundamentals of the German language, including speaking, comprehension, reading, writing. *(Fall, Spring, Summer) (Evenings)*

(101L) **GERM 1201L. Elementary German Practicum. (1)** Corequisite: GERM 1201. Drill, practice, practical application of structures and concepts. Two hours per week. *(Fall, Spring, Summer) (Evenings)*

(102) **GERM 1202. Elementary German. (3)** Prerequisite: GERM 1201 and 1201L, or equivalent. Corequisite: GERM 1202L. Fundamentals of the German language, including speaking, comprehension, reading, writing. *(Fall, Spring, Summer) (Evenings)*

(102L) **GERM 1202L. Elementary German Practicum. (1)** Corequisite: GERM 1202. Drill, practice, practical application of structures and concepts. Two hours per week. *(Fall, Spring, Summer) (Evenings)*

(201) **GERM 2201. Intermediate German. (4)** Prerequisite: GERM 1202 or permission of the Department. Review of grammar, composition and conversation, based upon readings on the culture and civilizations of German-speaking countries. Three class hours and two lab hours per week. *(Fall, Spring)*

(202) **GERM 2202. Intermediate German. (4)** Prerequisite: GERM 2201 or permission of the Department. Continuation of GERM 2201. Review of grammar, composition and conversation, based upon readings on the culture and civilization of German-speaking countries. Three class hours and two lab hours per week. Students who wish to continue with advanced offerings in German are advised to select GERM 2202. *(Fall, Spring)*

(330) **GERM 3030. Studies in German Culture. (3)** Prerequisite for German major: satisfactory completion of GERM 2202 or equivalent. Conducted in English. No knowledge of German required. A study of the life and thought of German-speaking people both past and present. Course topic will concentrate on a geographical area, a particular cultural institution or a particular period. May be repeated as topic changes. *(Alternate years)*

(350) **GERM 3050. Studies in German Literature. (3)** Prerequisite for German major: satisfactory completion of GERM 2202 or equivalent. Conducted in English. No knowledge of German required. May be repeated as topic changes. *(Yearly)*

(301) **GERM 3201. Advanced German Grammar, Composition and Conversation I. (3)** Prerequisite: GERM 2202 or permission of the Department. For prospective teachers of German and students who want intensive oral and written work in the language. Three class hours per week and lab work as assigned by instructor. *(Yearly)*

(302) **GERM 3202. Advanced German Grammar and Composition II. (3)** Prerequisite: GERM 2202 or permission of the Department. Intensive review of German grammar. Discussion of prepared topics drawn from newspapers and periodicals. Three class hours per week and laboratory work as assigned by instructor. *(Yearly)*

(310) **GERM 3210. Business German. (3)** Prerequisite: GERM 2202 or equivalent. Introduction to the spoken and written language of the German business world; formalities and conventions of business correspondence, import/export, economics, and commercial transactions. *(Alternate years)*

**Courses for Advanced Undergraduates and Graduate Students**

Additional work required for graduate credit.

(410) **GERM 4010. Periods in the History of German Literature. (3) (3G)** (a) Medieval literature, (b) Classicism, (c) Romanticism, (3) Contemporary literature. Prerequisites: two 3000-level courses or permission of the Department. Study of the major writers and works in a given period. Readings, lectures and reports. May be repeated for major credit with change of topic. *(Alternate years)*

(420) **GERM 4020. The Chief Genres in German Literature. (3) (3G)** (a) Novel, (b) Theater, (c) Lyric poetry. Prerequisites: two 3000-level courses or permission of the Department. An analysis of a major genre and its development within German literary history. Readings, lectures and reports. May be repeated for major credit with change of topic. *(Alternate years)*

(450) **GERM 4050. Special Topics in German. (1-2-3) (1-2-3G)** Prerequisite: one 3000-level course or permission of the instructor. Treatment of a special group or figure in German literature, specialized topic in German culture or advanced work in German language. May be repeated for credit with change of topic. *(Fall, Spring, Summer)*

(403) **GERM 4203. Survey of German Literature I. (3) (3G)** Prerequisites: two 3000-level courses or permission of the Department. General introduction to German literature from the Middle Ages to the Classical Period. Book reports and class discussion on collateral readings. *(On demand)*

(404) **GERM 4204. Survey of German Literature II. (3) (3G)** Prerequisite: two 3000-level courses or permission of the Department. German literature since Classicism. Book reports and discussions on collateral readings. *(On demand)*

## COURSE DESCRIPTIONS

### RUSSIAN (RUSS)

(101) **RUSS 1201. Elementary Russian. (3)** Corequisite: RUSS 1201L. Fundamentals of the Russian language, including speaking, comprehension, reading, writing. *(Fall)*

(101L) **RUSS 1201L. Elementary Russian Practicum. (1)** Corequisite: RUSS 1201. Drill, practice, practical application of structures and concepts learned in class. Two hours per week. *(Fall)*

(102) **RUSS 1202. Elementary Russian. (3)** Prerequisites: RUSS 1201 and 1201L. Fundamentals of the Russian language, including speaking, comprehension, reading, writing. *(Spring)*

(102L) **RUSS 1202L. Elementary Russian Practicum. (1)** Prerequisites: RUSS 1201 and 1201L. Corequisite: 1202. Drill, practice, practical application of structures and concepts learned in class. Two hours per week. *(Spring)*

(201) **RUSS 2201. Intermediate Russian. (4)** Prerequisite: RUSS 1202 or permission of the Department. Review of grammar, with conversation and composition based upon readings in Russian culture and civilization. Three class hours and two lab hours per week. *(On demand)*

(202) **RUSS 2202. Intermediate Russian. (4)** Prerequisite: RUSS 2201 or permission of the Department. Continuation of grammar, conversation and composition skills, based on readings in Russian literature. Three class hours and two lab hours per week. *(On demand)*

## COURSE DESCRIPTIONS

### SPANISH (SPAN)

**Courses for Undergraduates**

(101) **SPAN 1201. Elementary Spanish. (3)** Corequisite: SPAN 1201L. Fundamentals of the Spanish language, including speaking, comprehension, reading, writing. *(Fall, Spring, Summer) (Evenings)*

(101L) **SPAN 1201L. Elementary Spanish Practicum. (1)** Corequisite: SPAN 1201. Drill, practice, practical application of structures and concepts learned in class. Two hours per week. *(Fall, Spring, Summer) (Evenings)*

(102) **SPAN 1202. Elementary Spanish. (3)** Prerequisites: SPAN 1201 and 1201L, or equivalent. Corequisites: SPAN 1202L. Fundamentals of the Spanish language, including speaking, comprehension, reading, writing. *(Fall, Spring, Summer) (Evenings)*

(102L) **SPAN 1202L. Elementary Spanish Practicum. (1)** Corequisite: SPAN 1202. Drill, practice, practical application of structures and concepts learned in class. Two hours per week. *(Fall, Spring, Summer) (Evenings)*

(250) **SPAN 2050. Topics in Spanish. (1-3)** Prerequisite: SPAN 2201 or permission of the Department. Study of a particular facet of the Spanish language, culture or literature. May be repeated for credit as topics vary. *(On demand)*

(209) **SPAN 2009. Hispanic Literature in English Translation. (3)** Studies of Spanish or Spanish American literature in translation. Not applicable toward Spanish major. May be repeated for credit as topics vary. Course conducted in English. *(On demand)*

(201) **SPAN 2201. Intermediate Spanish. (4)** Prerequisite: SPAN 1202 or permission of the Department. Reinforcement and expansion of skill mastery developed in elementary courses on basis of grammar review and conversation. Three class hours and two lab hours per week. *(Fall, Spring)*

(202) **SPAN 2202. Intermediate Spanish. (4)** Prerequisite: SPAN 2201 or permission of the Department. Extensive practice in oral and written control of the language on basis of readings from Spanish or Spanish American literature. Three class hours and two lab hours per week. *(Fall, Spring)*

(210) **SPAN 2210. Business Spanish. (3)** Prerequisite: SPAN 2201 or equivalent. Introduction to the spoken and written language of the Hispanic business community. Acquisition and use of financial, legal and commercial terminology. Three class hours and two lab hours per week. (Alternate to SPAN 2202.) *(Alternate years)*

(301) **SPAN 3201. Advanced Grammar and Composition. (3)** Prerequisite: SPAN 2202 or permission of the Department. Intensive oral and written work in Spanish. *(Fall)*

(302) **SPAN 3202. Advanced Conversation and Composition. (3)** Prerequisite: SPAN 2202 or permission of the Department. Intensive oral and written work in the language. Reports on collateral readings. *(Spring)*

(303) **SPAN 3203. Introduction to Spanish Literature. (3)** Prerequisite: SPAN 2202 or permission of the Department. Reading and analysis of representative master works of Spanish literature from its origins through the 20th century. *(Alternate years)*

(309) **SPAN 3209. Spanish Civilization and Culture. (3)** Prerequisite: SPAN 2202 or permission of the Department. An overview of the cultural heritage of peninsular Spain. *(Alternate years)*

(310) **SPAN 3210. Spanish American Civilization and Culture. (3)** Prerequisite: SPAN 2202 or permission of Department. Introduction to the cultural heritage of Spanish America. *(Alternate years)*

(312) **SPAN 3212. Introduction to Spanish American Literature. (3)** Prerequisite: SPAN 2202 or permission of the Department. Introduction to studies in Spanish American literature from the 16th century through the contemporary period. *(Alternate years)*

(331) **SPAN 3231. Spanish Phonetics. (3)** Prerequisite: SPAN 2202 or permission of the Department. Detailed analysis of description and production of Spanish sounds. Practical exercises include phonetic transcription and recordings. Two class hours and two lab hours per week. *(On demand)*

**Courses for Advanced Undergraduates and Graduate Students**

Additional work required for graduate credit.

(450) **SPAN 4050. Selected Readings in Spanish. (1-2-3) (1-2-3G)** (Course may be taken for either one, two or three hours of credit.) Prerequisites: two 3000-level courses or permission of the Department. Consideration of a predetermined topic. May be repeated for credit as topics vary. *(Yearly)*

(401) **SPAN 4201. Nineteenth-Century Spanish Literature. (3) (3G)** Prerequisites: two 3000-level courses or permission of the Department. Survey of peninsular literature from Costumbrismo through the Generation of 1898. Lectures, discussions and reports. *(Alternate years)*

(402) **SPA4202. Twentieth-Century Spanish Literature. (3) (3G)** Prerequisites: two 3000-level courses or permission of the Department. Treatment of major literary developments from the Generation of 1898 to present day. Lectures, discussions and reports. *(Alternate years)*

(405) **SPAN 4205. Novel of the Golden Age. (3) (3G)** Prerequisites: two 3000-level courses or permission of the Department. *El Lazarillo* through *El Criticon.* Lectures, discussions and reports. *(Alternate years)*

(406) **SPAN 4206. Theater of the Golden Age. (3) (3G)** Prerequisites: two 3000-level courses or permission of the Department. Study of works of the leading dramatists of the period. Lectures, discussions and reports. *(Alternate years)*

(410) **SPAN 4210. Studies in Spanish American Poetry. (3) (3G)** Prerequisites: two 3000-level courses or permission of the Department. Studies of 19th- and 20th-century Spanish American poetry. *(Alternate years)*

(411) **SPAN 4211. Studies in Spanish American Prose Fiction. (3) (3G)** Prerequisites: two 3000-level courses or permission of the Department. Studies of 19th- and 20th-century Spanish American prose fiction. *(Alternate years)*

(412) **SPAN 4212. Studies in Spanish American Theater. (3) (3G)** Prerequisites: two 3000-level courses or permission of the Department. Studies of 20th-century Spanish American theater. *(On demand)*

(413) **SPAN 4213. Don Quijote. (3) (3G)** Prerequisites: two 3000-level Spanish courses or permission of the Department. Study of Cervantes' masterpiece, which is considered by many critics to be the basis of the modern Western novel. *(On demand)*

# Department of Geography and Earth Sciences

*Chairperson:* Professor Stuart
*Professors:* Clay, Lord, Nunnally, Orr, Pyle, Schul, Steila
*Associate Professors:* Furuseth, Ingalls, Ives, Walcott
*Assistant Professors:* Bender, Bobyarchick, Gibson
*Lecturers:* Christian, Martin, Moore, Simpson, Smith

The Department of Geography and Earth Sciences offers an interdisciplinary program of study that has two different but related components. Earth Sciences includes the study of the history and structure of the earth and its atmosphere. Geography emphasizes the locational aspects of human activities as they are distributed over the earth.

**Earth Sciences.** The Earth Sciences program focuses on the earth as a natural system. Course work in areas such as mineralogy, geochemistry, structural geology, tectonics, stratigraphy, petrology and optical mineralogy constitutes the equivalent of a major in geology. Alternatively, some of the courses may be combined with others such as hydrologic processes, soil science and meteorology to complete a concentration in environmental earth sciences.

Students majoring in earth sciences pursue careers in mining, oil and gas exploration, meteorology, environmental planning, site analysis, terrain analysis, and in teaching at all levels. There are employment opportunities in both government and private industry with the greatest range of positions available to students who earn graduate degrees. The program is designed to prepare students for advanced study in geology and earth sciences.

**Geography.** The Geography curriculum is oriented toward the methodologies of social science in which the importance of location is stressed. Traditional regional studies and conceptual courses that deal with land use patterns, transportation systems, industrial location, the distribution of retail activities, city planning, and urban systems are augmented by technique-oriented courses such as map design and compilation, computer mapping, analysis of satellite images, statistical methods and geographic information systems. These courses prepare students in both the concepts and methods of contemporary spatial analysis.

Students majoring in geography find careers open to them in urban and regional planning, cartography, marketing research, transportation planning, real estate development and teaching. As in the earth sciences, the greatest range of opportunities is open to those who earn graduate degrees. See pages 401-403 regarding the M.A. degree program at UNCC.

A unique advantage of the Department's interdisciplinary curriculum is that students majoring in one component of the program may take related courses in the other component. A student concentrating in geology, for example, might study computer mapping as part of the earth sciences major. Conversely, a geography student interested in land use planning could take supporting course work in soil science or hydrology as part of the major.

**Facilities.** The Department of Geography and Earth Sciences is housed in modern, well-equipped facilities. Extensive rock, mineral and fossil holdings are available for instructional purposes. An optical mineralogy laboratory is equipped with high-quality petrographic microscopes and an image analysis system through which microscope images are projected onto a color television monitor. The petrology lab includes a precision thin section machine and an automated photomicrography unit that is attached to a research-grade polarizing microscope. An automatic weather station, stream gauges and other instruments are used by environmental earth science students. Frequent field trips are facilitated by the Department's 15-passenger van and extensive field instruments and camping gear.

The UNCC Cartography Lab has earned an international reputation for the quality of the maps produced there and published in a series of analytical atlases. The lab includes three fully equipped darkrooms and two finishing rooms equipped with professional mapmaking equipment such as process cameras, contact frames, plate makers, color proof exposure units, and a phototypesetter. The departmental microcomputer and data analysis lab includes MacIntosh and other Apple computers, a hard disk, laser printer, graphics terminal, and plotter connections to The University's mainframe computer. The data analysis lab is available for instruction as well as for faculty and student research.

**Cooperative Education in Geography and Earth Sciences.** Students in the Geography and Earth Sciences programs may obtain practical work experience while pursuing their degrees by participating in the Cooperative Education program. The work experience is approved by the Department and is closely related to the student's field of study. Students interested in learning more about participating in this program should contact the Department of Geography and Earth Sciences.

### GEOGRAPHY MAJOR: BACHELOR OF ARTS

A major leading to a B.A. degree consists of 29 hours in geography and earth sciences and will include GEOG 1101, 1105, 2100, 2101, 2110 and ESCI 1101. Except for required courses, all work offered for the major must be numbered 2100 or above. Students are encouraged to take additional course work in related disciplines or to select a second major.

### GEOGRAPHY MAJOR: BACHELOR OF SCIENCE

A major leading to a B.S. degree consists of 40 hours of geography and earth sciences and will include GEOG 1101, 1105, 2100, 2101, 2110 and ESCI 1101. In addition, students must complete ENGL 2116 (Introduction to Technical Communication) as well as general education English requirements, and CSCI 1100 and one mathematics course above MATH 1103. Informal concentrations are available within the major in areas such as urban analysis and planning, locational analysis, cartographic techniques and research methodologies. Students should contact their advisers about these and other possible concentrations. Except for required courses, all work offered for the major must be in courses numbered 2100 or above.

### GEOGRAPHY MINOR

A minor in geography consists of 19 hours, including GEOG 1101 and 1105 and ESCI 1101, and nine additional hours in geography. The minor can be tailored to support a number of majors, such as business, computer science, political science and architecture.

### EARTH SCIENCES MAJOR: BACHELOR OF ARTS

A major in Earth Sciences leading to the B.A. degree consists of a minimum of 30 semester hours, including ESCI 1101, 1102, 2200 and 2210. The remaining 15 hours are selected from geography and earth sciences and must include at least nine hours in earth sciences courses numbered 3000 or above. Students are encouraged to take additional course work in related sciences and mathematics or to select a second major.

### EARTH SCIENCES MAJOR: BACHELOR OF SCIENCE

A major in Earth Sciences leading to a B.S. degree consists of a minimum of 40 hours in earth science or geography and will include ESCI 1101, 1102, 1102L, 2200, and 2210. Of the remaining 25 hours, 19 must be in earth sciences courses numbered 3000 or above. Geography courses taken to satisfy this 25-hour requirement must be numbered 2000 or above. Additional requirements are: (1) two semesters (eight hours) of biology, chemistry, or physics; (2) two semesters (at least six hours) of mathematics numbered MATH 1141 or higher; and (3) ENGL 2116 (Introduction to Technical Communication) in addition to general education English requirements.

Students pursuing the B.S. degree are encouraged to complete an informal concentration in geology or environmental studies by selecting one of the following sets of courses as part of the major: (a) **Concentration in Geology**—ESCI 3100, 3115, 3125, 3130 and 4130; or (b) **Concentration in Environmental Earth Sciences**—ESCI 2101, 3190, 3210, 3220, 3230, 3231, 4150 and two geology lab courses plus electives in earth sciences or geography.

### EARTH SCIENCES MINOR

A minor in earth sciences consists of 20 hours of earth sciences courses. Students will choose either a geology option (ESCI 1102, 1102L and 3100 are required) or an environmental earth sciences option (ESCI 1101, 3230 and 3231 are required); and take 12 additional hours in earth sciences. The minor can be tailored to support a number of majors, such as engineering, biology, chemistry or physics.

## SUGGESTED CURRICULUM OUTLINE FOR THE GEOGRAPHY MAJOR LEADING TO THE B.S. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| English 1101 | 3 | GOAL V: L | 3 |
| Mathematics 1101 or 1103 | 3 | English 1102 | 3 |
| ESCI 1101 | 4 | Mathematics 1120 | 3 |
| GEOG 1101 | 3 | ESCI 1102, 1102L (GOAL IV) | 4 |
| | | GEOG 1105 | 3 |
| | 13 | | 16 |

### Sophomore Year

| | | | |
|---|---|---|---|
| Computer Science 1100 | 4 | Foreign Language 1201 | 4 |
| English 2116 | 3 | ESCI 2101 (GOAL III) | 3 |
| GEOG 3265 (GOAL VI) | 3 | GOAL V: A | 3 |
| GEOG 2100 | 3 | GEOG 2110 | 3 |
| GEOG 2101 | 1 | ESCI 3100 (GOAL IV) | 4 |
| | 14 | | 17 |

### Junior Year

| | | | |
|---|---|---|---|
| GOAL I: W | 3 | GEOG Electives | 6 |
| GEOG Electives | 9 | Electives | 6 |
| Foreign Language 1202 | 4 | GOAL IV | 3 |
| | 16 | | 16 |

### Senior Year

| | | | |
|---|---|---|---|
| GEOG Elective | 3 | Electives | 14 |
| Electives | 12 | | |
| | 15 | | 14 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## CURRICULUM OUTLINE
## FOR THE EARTH SCIENCES MAJOR
## LEADING TO THE B.S. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| English 1101 | 3 | English 1102 | 3 |
| Mathematics 1103 | 3 | ESCI 1101 or 1102, 1102L | 4 |
| ESCI 1101 or 1102, 1102L | 4 | GOAL V: L | 3 |
| GOAL VI | 3 | GEOG 1101 (GOAL VI) | 3 |
| | | ESCI 2101 (GOAL III) | 3 |
| | 13 | | 16 |

### Sophomore Year

| | | | |
|---|---|---|---|
| Mathematics 1141 | 4 | Mathematics 1142 | 4 |
| ESCI 2200 | 3 | ESCI 2210 | 4 |
| English 2116 | 3 | Foreign Language 1202 | 4 |
| Foreign Language 1201 | 4 | ESCI 3100 | 4 |
| | 14 | | 16 |

## (A) GEOLOGY CONCENTRATION

### Junior Year

| | | | |
|---|---|---|---|
| GOAL V: A | 3 | Science Elective | 4 |
| Chemistry 1101, 1101L | 4 | ESCI 3130 | 4 |
| GOAL III | 3 | ESCI 4130 | 4 |
| ESCI 3115 | 4 | GOAL I: W | 3 |
| | 14 | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| ESCI 4100 | 4 | ESCI 4105 | 4 |
| ESCI 3125 | 4 | Electives | 12 |
| ESCI 4135 | 4 | | |
| Elective | 4 | | |
| | 16 | | 16 |

## (B) ENVIRONMENTAL CONCENTRATION

### Junior Year

| | | | |
|---|---|---|---|
| ESCI 3220 | 4 | ESCI 3230 | 3 |
| ESCI 3210 | 3 | ESCI 4155 | 3 |
| Electives | 9 | Elective | 3 |
| | | Geology Elective | 4 |
| | | GOAL I: W | 3 |
| | 16 | | 16 |

### Senior Year

| | | | |
|---|---|---|---|
| ESCI 3190 | 3 | ESCI 4150 | 3 |
| ESCI 3231 | 1 | Electives | 12 |
| Electives | 10 | | |
| | 14 | | 15 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

## GEOGRAPHY (GEOG)

### Courses for Undergraduates

(102) **GEOG 1101. World Regional Geography. (3)** A world regional study which emphasizes the distinctly human responses of people to various geographic situations throughout the world. The nature and development of cultural regions will be studied. *(Fall, Spring, Summer) (Evenings)*

(105) **GEOG 1105. The Location of Human Activity. (3)** An examination of factors which account for the locational characteristics of economic and other human activities. The locational decision-making process is examined as a means of understanding human spatial behavior. *(Fall, Spring, Summer)*

(201) **GEOG 2100. Maps and Graphs. (3)** A study of cartography and its essential processes, with particular emphasis on the map as a communication system, the effective communication of data by means of graphical symbols, map interpretation and discussion of map production techniques. *(Fall, Spring) (Evenings)*

(201L) **GEOG 2101. Cartographic Laboratory. (1)** Prerequisite or corequisite: GEOG 2100. The laboratory emphasizes development of map construction skills. This includes positive and negative drafting techniques, lettering techniques and the use of scale changing devices. Two hours of laboratory per week. *(Fall, Spring) (Evenings)*

(331) **GEOG 2105. Introduction to Image Interpretation. (3)** Procedures and practice in the recognition, measurement and analysis of features on aerial photographs, thermal images, radar images, LANDSAT scenes and other satellite imagery. One hour lecture and two two-hour labs per week. *(Alternate years)*

(203) **GEOG 2110. Introduction to Geographic Research. (3)** Research design and resources in geographic research. Emphasis on spatial applications in summary statistics; spatial summaries, statistical hypothesis testing; sampling and estimation; association, correlation and regression. *(Fall, Spring) (Evenings)*

(302) **GEOG 2150. Geography of Polar Regions. (3)** Arctic and Antarctic regions, history of exploration, the physical environment and political significance. *(Yearly)*

(303) **GEOG 2155. Geography of the U.S. and Canada. (3)** Geographic structure of the U.S. and Canada with emphasis on physical environment and patterns of human activities. *(Fall)*

(304) **GEOG 2160. The South. (3)** The culture, environment, population and economy of the southeastern U.S.; emphasis on current trends and future implications. *(Yearly)*

(310) **GEOG 3000. Topics in Regional Geography. (3)** Examination of major geographical regions of the world. May be repeated for credit as topics vary. *(Yearly)*

(320) **GEOG 3100. The City and Its Region. (3)** Study of the regional system of cities in terms of their size, spacing, historical evolution, functional relationships and future prospects. *(Fall, Spring)*

(321) **GEOG 3105. Internal Structure of the City. (3)** Integrative study of the spatial structure of cities with emphasis on land use patterns and models, transportation systems, residential concentrations, commercial activities and manufacturing zones. *(Fall, Spring, Summer)*

(322) **GEOG 3110. Urban Political Geography. (3)** Spatial organization of metropolitan America. How metropolitan residents organize space into territorial units and the human, social and political ramifications of that organization. Spatial consequences of the most common modes of political, administrative and territorial organization. *(Alternate years)*

(344) **GEOG 3115. Urban Transportation Problems. (3)** Problems associated with moving goods, people and information in urban areas. Topics include mass transit and pollution problems. *(Alternate years)*

(313) **GEOG 3150. Manufacturing Geography. (3)** Factors relating to the nature, locations and development of manufacturing industries. Emphasis upon classification of manufacturers, principal areas of manufacturing and the role of manufacturing in regional development. *(Spring) (Evenings)*

(316) **GEOG 3155. Retail Location. (3)** Spatial attributes of retailing and related activities. Location patterns, store location research, trade area delineation and consumer spatial behavior. *(Fall)*

(317) **GEOG 3160. The Geography of Transportation Systems. (3)** Geographical and human factors that affect the movement of goods and people from place to place. Emphasis on transportation routes and networks, commodity flow patterns and the locational implications of freight rates. *(Spring)*

(340) **GEOG 3200. Land Use Planning. (3)** Land use planning, with emphasis on basic planning processes, implementation techniques and strategies, and issues confronting contemporary urban and rural planning. *(Spring)*

(341) **GEOG 3205. Resource Planning. (3)** Resources of the world, especially as they pertain to population, their use and misuse and present conservational practices as they relate to planning for future resource adequacy. *(On demand)*

(342) **GEOG 3210. The Region and Planning. (3)** The regional concept and its application to urban and regional planning with emphasis upon techniques used in regional analysis. *(On demand)*

(343) **GEOG 3215. Environmental Planning. (3)** Interaction and relationships between natural and human-made elements of the environment with emphasis on planning concepts and methodologies used in contemporary environmental planning. *(Fall)*

(324) **GEOG 3250. World Food Problems. (3)** Magnitude, consequences, major causes and potential solutions to the world's food problems. *(On demand)*

(312) **GEOG 3255. Applied Population Analysis. (3)** Population data sources; measuring population change; elementary projection and estimation techniques; spatial sampling; migration; survey design; applications in the public and private sectors. *(Fall)*

(314) **GEOG 3260. Medical Geography. (3)** Traditional aspects of medical geography including disease mapping, disease ecology and statistical association and more recent social scientific topics, including disease diffusion, health care facilities planning and spatial behavior. *(On demand)*

(323) **GEOG 3265. Behavioral Geography. (3)** Behavioral approach to environmental decision-making, personal space, territoriality, room and building geography, consumer behavior, activity space, perception of wilderness and natural hazards, communication biases. *(Fall)*

**GEOG 3500. Geography Cooperative Education Experience. (0)** Enrollment in this course is required for the Department's geography cooperative education students during the semester that they are working. Evaluation is *Pass/No Credit. (On demand)*

**GEOG 3501. Geography Cooperative Education Seminar. (1)** This course is required of geography cooperative education students in the semester following each work assignment for presentation of geography reports on the co-op learning experience. *(On demand)*

**Courses for Advanced Undergraduates and Graduate Students**

(402) **GEOG 4000. Selected Topics in Geography. (3) (3G)** Prerequisite: consent of instructor. An intensive study of topics in geography from such areas as urban, manufacturing, tertiary activity, transportation, primary activity and political geography. Topics vary from semester to semester. May be repeated for credit as topics vary. *(Yearly)*

(332) **GEOG 4100. Cartographic Techniques. (3) (3G)** Prerequisite: GEOG 2100. Preparation of maps, figures and charts at a professional level of competence. Techniques to be emphasized include scribing and various related photographic processes. Two laboratories of three hours each per week. *(Spring)*

(333) **GEOG 4105. Cartographic Design and Map Construction. (3) (3G)** Design process and basic map construction techniques with particular emphasis on the graphic elements of map design, planning map design, creating visual hierarchies, the uses of color, and basic mechanical color separation. *(Fall)*

(334) **GEOG 4110. Computer Mapping. (3) (3G)** Prerequisites: GEOG 2100 and CSCI 1100 or consent of instructor. Automated methods of gathering, storing, manipulating and displaying spatial data. Emphasis on the use of existing software and the design and implementation of geographic data structures and algorithms. *(Spring)*

(335) **GEOG 4115. Geographic Information Systems. (3) (3G)** Development, current state-of-the-art and future trends in geographic information processing. Emphasis placed on data gathering, storage, and retrieval, analytical capabilities and display technologies. Class project in which students design a geographic information system for a local application. *(Fall)*

(480) **GEOG 4400. Internship in Geography. (3-6) (3-6G)** Prerequisite: consent of the Department. Research and/or work experience designed to be a logical extension of a student's academic program. The student must apply to Department for an internship by submitting a proposal which specifies the type of work/research experience preferred and how the internship will complement his or her academic program. The student can receive three to six hours credit depending on the nature and extent of the internship assignment. *(On demand)*

(450) **GEOG 4800. Individual Study in Geography. (1-4) (1-4G)** Permission of Department must be obtained and credit hours established in advance. Tutorial study or special research problems. May be repeated for credit. *(On demand)*

## EARTH SCIENCES (ESCI)

**Courses for Undergraduates**

(101) **ESCI 1101. Earth Science-Geography. (4)** Basic geographical principles and processes in earth science: the grid system, weather, climate, the waters, soils and vegetation. Three lecture hours and completion of weekly laboratory units. *(Fall, Spring, Summer) (Evenings)*

(102) **ESCI 1102. *Earth Science-Geology. (3)** A study of the basic geological principles and processes in earth science; the earth as a planet; treatment of physical processes shaping the earth; earth materials and landforms. Three lecture hours per week. *(Fall, Spring, Summer) (Evenings)*

**ESCI 1102L. *Earth Science-Geology Laboratory. (1)** Prerequisite or corequisite: ESCI 1102. Experimental study and investigation of the basic geological principles and processes in earth science; minerals, rocks, earth materials, and landforms. One lab period of two hours per week. *(Fall, Spring, Summer) (Evenings)*

(300) **ESCI 2100. The Violent Earth. (3)** Volcanoes, earthquakes, hurricanes, tornadoes, floods and other catastrophic natural phenomena with emphasis on causes, effects and human adjustments. *(Fall)*

(301) **ESCI 2101. The Environmental Dilemma. (3)** Nature, causes and responses to major environmental problems. *(Spring)*

(203) **ESCI 2200. Introduction to Earth Sciences Research. (3)** Prerequisites or corequisites: ESCI 1101, 1102 and 1102L. Basic techniques common to research in all of the earth sciences. Research design and organization, utilization of literature resources and the use of quantitative methods. *(Fall, Spring) (Evenings)*

(340) **ESCI 2210. Field Methods in the Earth Sciences. (4)** Prerequisites: ESCI 1101, 1102, 1102L and ENGL 2116 or consent of instructor. Field techniques used in studies of geology, topography, hydrology, soil, microclimate and vegetation. Writing skills related to the presentation of scientific data emphasized. Three lecture hours, two hours of lab per week. Earth Science majors should take ESCI 2210 as soon as possible after completion of ESCI 1101 and 1102-1102L. *(Spring, Fall)*

(306) **ESCI 3000. Selected Topics in Earth Sciences. (1-4)** Prerequisite: ESCI 1101 or 1102-1102L and consent of instructor. In-depth treatment of specific topics selected from one of the fields of the earth sciences. May be repeated for credit as topics vary. *(Yearly)*

(302) **ESCI 3100. Earth History. (4)** Prerequisites: ESCI 1102, 1102L. The origin and evolution of the earth's major features: the beginnings and changes of the earth's continents, atmosphere, oceans, life forms, set in the vast context of geologic time. Three hours of lecture, two hours of lab per week. *(Fall, Spring, Summer) (Evenings)*

**Although the laboratory and lecture sections of ESCI 1102 are taught as separate courses, it is recommended that students take ESCI 1102L concurrently with ESCI 1102. Students with scheduling problems or students not fulfilling the UNCC science and technology requirement may take the lecture without the laboratory. Students fulfilling the UNCC science and technology requirement must either: (a) take ESCI 1102 and ESCI 1102L concurrently or (b) take ESCI 1102L in a semester subsequent to taking ESCI 1102.*

(303) **ESCI 3110. Minerals and Rocks. (3)** Prerequisites or corequisites: ESCI 1102 and 1102L. Formation processes, composition and identification of rocks and minerals in the earth's crust with important abundance or special use. *(On demand)*

(351) **ESCI 3115. Mineralogy. (4)** Prerequisite: ESCI 1102. Prerequisite or corequisite: CHEM 1101-1101L or consent of the instructor. Identification, classification and description of minerals based on physical properties, crystallography, and chemical composition. Includes diagnostic techniques for identification of common ore and rock forming minerals. Three hours of lecture and one three-hour lab per week. *(Fall)*

(385) **ESCI 3120. Geochemistry. (4)** Prerequisites: ESCI 1102, 1102L, and CHEM 1101 or consent of the instructor. Geochemical survey of origin, evolution and present composition of the earth. *(Alternate years)*

(310) **ESCI 3125. Stratigraphy. (4)** Prerequisite: ESCI 3100. Vertical and horizontal relationships of layered earth materials as a key to understanding past depositional environments and their transformation through time. Three lecture hours, three lab hours per week. *(Spring)*

(360) **ESCI 3130. Structural Geology. (4)** Prerequisite: ESCI 3115 or consent of the instructor. Processes of the folding and fracturing of rock. The identification, description and relationship of these and other geologic problems based on field data. Three lecture hours, one three-hour lab per week. *(Spring)*

(341) **ESCI 3150. Natural Environments of North America. (3)** Prerequisites: ESCI 1101 or 1102-1102L. Regional geomorphology and ecology of North America with emphasis on development, maintenance, and interaction of the geomorphic and ecological provinces. *(Spring)*

(371) **ESCI 3170. Environmental Quality Management. (3)** Design and implementation of air and water resource management plans. *(On demand)*

(372) **ESCI 3180. Environmental Impact Analysis. (3)** Prerequisite: junior-senior standing. Environmental impact requirements and associated procedures, guidelines and methods of assessing physical environmental impacts. Three hours per week of combined lecture and supervised field work leading to the preparation of an environmental impact statement for a locally proposed action. *(On demand)*

(356) **ESCI 3190. Environmental Geology. (3)** Prerequisites: ESCI 1102, 1102L. Aspects of geology with direct or indirect impact on society. Topics include slope stability, earthquake hazards, solid waste disposal, flooding, ground water problems, soil loss, sediment pollution, watershed dynamics, water and soil pollution, and radioactive waste disposal. *(On demand)*

(304) **ESCI 3200. Oceanography. (3)** Oceanography with emphasis on physical, chemical and geological aspects of the world oceans. Oceanic circulation, seawater composition and chemistry, and marine sedimentation and geology. *(On demand)*

(335) **ESCI 3210. Soil Science. (3)** Prerequisites: ESCI 1102, 1102L. Corequisite: CHEM 1101 or consent of the instructor. Study of soils-forming processes, with emphasis on management and use of soils. Two hours of lecture, three hours of lab per week with occasional field trips. *(Fall)*

(367) **ESCI 3220. Hydrologic Processes. (4)** Prerequisite: ESCI 1101 or 1102-1102L. Atmospheric, soils and geologic aspects of surface and ground water processes. Three lecture hours and one two-hour lab per week. *(Fall)*

(342) **ESCI 3230. Meteorology. (3)** Atmospheric phenomena, weather-producing processes, weather forecasting and weather's effects upon human activities. *(Spring)*

(343) **ESCI 3231. Weather Analysis Laboratory. (1)** Prerequisite or corequisite: ESCI 3230 or consent of instructor. Weather observation and techniques of weather forecasting. One two-hour lab per week. *(Fall, Spring)*

**ESCI 3500. Earth Science Cooperative Education Experience. (0)** Enrollment in this course is required for the Department's earth science cooperative education students during the semester that they are working. Evaluation is *Pass/No Credit*. *(On demand)*

**ESCI 3501. Earth Science Cooperative Education Seminar. (1)** This course is required of earth science cooperative education students in the semester following each work assignment for presentation of earth science reports on the co-op learning experience. *(On demand)*

**Courses for Advanced Undergraduates and Graduate Students**

(352) **ESCI 4100. Igneous and Metamorphic Petrology. (4) (4G)** Prerequisite: ESCI 3115. Classification, mineralogy and chemical properties of igneous and metamorphic rocks including the tectonic processes by which they formed. Lab emphasizes hand specimen and petrographic description and interpretation of rocks in thin sections. *(Fall)*

(353) **ESCI 4105. Sedimentary Petrology. (4) (4G)** Prerequisite: ESCI 3115 or consent of instructor. Examination of sedimentary rock features and compositions as related to origin, dispersion, deposition, diagenesis, classification and general distribution of sedimentary materials; principles of physical stratigraphy and biostratigraphy. Three hours of lecture and one three-hour lab per week. *(Alternate years)*

(410) **ESCI 4115. Applied Geophysics. (4) (4G)** Prerequisites: ESCI 3115, 3125, 3130 and introductory physics or consent of instructor. Instrumental analysis of the earth's physical parameters. Study of human-induced seismic and electrical signals, and natural magnetic and gravitational fields for the purposes of locating faults, ore bodies, ground water and other earth hazards or resources. Three hours of lecture and one two-hour lab per week. *(On demand)*

(355) **ESCI 4120. Geologic Mapping and Interpretation. (4) (4G)** Prerequisites: ESCI 3130 and 4100 or consent of instructor. Field and lab oriented study using principles of mineralogy, petrology and structural geology. Involves collection and resolution of field data, techniques of presenting data, development of geologic maps, and critical reviews of existing literature. Two hours of lecture, four hours of lab/field work per week. *(On demand)*

(470) **ESCI 4125. Geologic Summer Field Camp. (6) (6G)** Prerequisite: junior standing and consent of instructor. Concentrated field investigation of geologic features. Data collection in the field, geologic mapping, report and map preparation and time management. Location of field camp will be specified each time course is offered. Extra course work required for graduate credit. *(Summer)*

(375) **ESCI 4130. Optical Mineralogy. (4) (4G)** Prerequisite: ESCI 3115. Light optics theory, the behavior of plane polarized light in a solid medium. The laboratory emphasizes the use of petrographic microscope oil immersion techniques and identification of the common rock forming minerals. Three hours of lecture and one three-hour lab per week. *(Spring)*

(425) **ESCI 4135. Tectonics. (4) (4G)** Prerequisite: ESCI 3130 or consent of the instructor. A systematic examination of the evolution and dynamics of the earth from the perspective of plate tectonics theory. Three lecture hours, one three-hour lab per week. *(Alternate years)*

(348) **ESCI 4150. Applied Climatology. (3) (3G)** Prerequisites: ESCI 2200 or Statistics, and ESCI 3230 or consent of instructor. Methods of acquiring and analyzing climatic data in various types of applied problems. Emphasis on methods to assess and reduce the economic impacts of weather effects upon human activities. *(On demand)*

(362) **ESCI 4155. Fluvial Processes. (4) (4G)** Prerequisite: ESCI 3220. Hydrologic and geomorphic study of the transport of water and earth materials within stream systems. Erosion, mass wasting, open channel flow, sediment transport, flooding, stream channel morphology, morphometry of drainage basins, and related topics. Three lecture hours, two lab hours per week. *(Spring)*

(480) **ESCI 4400. Internship in Earth Sciences. (3-6) (3-6G)** Prerequisite: consent of the Department. Research and/or work experience designed to be a logical extension of a student's academic program. The student must apply to Department for an internship by submitting a proposal which specifies the type of work/research experience preferred and how the internship will complement his or her academic program. The Department will attempt to place the selected students in cooperating community organizations to complete specified research or work-related tasks which are based on a contractual arrangement between the student and community organization. The student can receive three to six hours credit, depending on the nature and extent of the internship assignment. *(On demand)*

(460) **ESCI 4800. Individual Study in Earth Sciences. (1-4) (1-4G)** Prerequisite: permission of the Department and credit hours established in advance. Tutorial study or special research problems. May be repeated for credit as topics vary. *(On demand)*

# Department of History

*Chairperson:* Professor Escott
*Professors:* Josephson, Morrill, Patterson, Perzel, Rieke
*Robert Lee Bailey Professor:* Goldfield
*Associate Professors:* Blackwelder, Haber, Johnson, Laurent
*Associate Professor Emeritus:* R. Blackwelder
*Assistant Professors:* Brown, Gordon, Kierner, Livingston, Usselman

History is the broadest and most integrative of all disciplines concerned with human beings and society. Today's historians use the research tools of the social sciences to understand and explain major events and changes in human experience over time. Yet history has always been considered one of the humanities, and it remains so because historians are concerned with issues of value and meaning, with the significance that historical events had for the lives of individuals and groups. Students of history gain an understanding of people, groups and society and a sensitivity both to detailed research and the "big picture." Through the study of history, students can become better prepared for life in a rapidly changing world and a rapidly evolving economy.

Professions like law and medicine have always considered history an ideal undergraduate major because it emphasizes the essential intellectual skills: critical thinking, research, writing and speaking. For these reasons history also remains a sound preparation for almost any undergraduate and a good choice for the typical student in America, who graduates with a basic education rather than a specific job training. Most history majors, like other majors in the arts and sciences, go into a wide variety of jobs in the business world—from sales or communications to research and administration. The most popular history-related field that majors enter is teaching, and the Department of History offers teacher-certification programs at all levels in cooperation with the College of Education and Allied Professions. Other opportunities for training in history-related fields are available as well. Members of the faculty have expertise and offer courses in historic preservation, local history, and other aspects of public history. Through the master's program history majors can pursue their interests at the graduate level. (See pages 404-405).

**Study Abroad.** Arrangements can be made for study abroad in Asia, Africa, Europe, Latin America or Canada.

## BACHELOR OF ARTS

A major in history leading to the B.A. degree, except for students in a teaching certificate program, consists of 36 hours of history, including HIST 1120, 1121 and 2100 and at least six hours in any of the following areas: Asian History, African History or Latin American History. Three semester hours must be taken at the 4000 level. Related work consists of 15 hours of approved work in a discipline other than history, including the option of 15 hours in a multidisciplinary area, such as International Studies, Afro-American and African Studies, Women's Studies and American Studies. The completion of a minor or second major fulfills the related work requirement.

## TEACHER CERTIFICATION

A major in history leading to the B.A. degree and **secondary teacher certification** consists of 30 hours of history, including HIST 1120, 1121 and 2100 and at least six hours in any of the following areas: Asian History, African History, or Latin American History. Three semester hours must be taken at the 4000 level. Students seeking certification must take at least three semester hours of American history. Related work of 21 hours evenly distributed among three of the social sciences (Anthropology, Economics, Geography, Political Science and Sociology) qualifies the student for certification in social studies. Curricula for teacher certification must be in accordance with the curriculum of the College of Education and Allied Professions. In addition, the candidate for secondary certification must fulfill the requirements of the North Carolina Department of Public Instruction.

A major in history leading to the B.A. degree and **intermediate teacher certification** consists of 24 hours in history, including HIST 1120, 1121 and 2100, and at least six hours of any of the following areas: Asian History, African History, or Latin American History. Students seeking certification must take at least three hours of American History. Curricula for teacher certification candidates

must be in accordance with the curriculum of the College of Education and Allied Professions. Related work must be consistent with the State guidelines for intermediate certification.

## HISTORY MINOR

A minor in History consists of 18 semester hours including HIST 1121; no more than six additional hours at the 1000 level; and at least nine semester hours selected from courses above the 1000 level. The student must achieve a minimum grade point average of 2.0 in all history courses.

## HONORS PROGRAM IN HISTORY

The Department of History offers an honors program as well as individual honors courses. Both history majors and non-majors are welcome to participate.

*Admission.* Students or faculty may initiate applications for admission to the History Honors Program. Admission into the program is not final until both the Department Honors Committee and the University Honors Council approve the student for candidacy.

*Courses.* Honors sections of various courses are offered in addition to the honors thesis course.

*Certification Requirements.* To successfully complete the History Honors Program a student must complete three history honors courses—one in historical methods, one in research design and the honors thesis course. Students must have 3.5 GPA in all history courses completed and an overall GPA of 3.0.

## RECOMMENDED CURRICULUM OUTLINE FOR THE HISTORY MAJOR LEADING TO THE B.A. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| HIST 1120 | 3 | HIST 1121 | 3 |
| English 1101 | 3 | English 1102 | 3 |
| Mathematics | 3 | Mathematics or Computer Science 1100 or Philosophy 2105 | 3 |
| Foreign Language Proficiency | 4 | Foreign Language Proficiency | 4 |
| Related Work | 3 | Related Work | 3 |
| | 16 | | 16 |

### Sophomore Year

| | | | |
|---|---|---|---|
| HIST 2100 | 3 | HIST Elective (e.g., 1100) | 3 |
| HIST Elective (e.g., 1160) | 3 | HIST Elective (e.g., 1161) | 3 |
| Related Work | 3 | Related Work | 3 |
| GOAL IV | 4 | GOAL IV | 4 |
| GOAL I: (W) course outside major | 3 | | |
| | 16 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| HIST Nonwestern | 3 | HIST Nonwestern | 3 |
| HIST Elective | 3 | Related Work | 3 |
| GOAL V: (L) | 3 | GOAL V: (A) | 3 |
| Other GOALS as needed | 3 | Other GOALS as needed | 3 |
| Elective | 3 | Elective | 3 |
| | 15 | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| HIST 4000-level Seminar | 3 | HIST Elective | 3 |
| HIST Elective | 3 | Electives | 9 |
| Electives | 3 | | |
| | 15 | | 12 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## HISTORY (HIST)

**HIST 1100. The World in the 20th Century.** (3) Outstanding recent world developments in an historical context. *(Fall, Spring)*

(120) **HIST 1120. European History to 1660.** (3) Political and cultural developments of Western Europe from the fourth century A.D. to the Age of Absolutism. *(Fall, Spring, Summer) (Evenings)*

(121) **HIST 1121. European History Since 1660.** (3) European history from the Age of Absolutism to the present. *(Fall, Spring, Summer) (Evenings)*

(125) **HIST 1160. U.S. History I.** (3) American history from the earliest times to 1865. *(Fall, Spring, Summer) (Evenings)*

(126) **HIST 1161. U.S. History II.** (3) American history from 1865 to the present. *(Fall, Spring, Summer) (Evenings)*

(250) **HIST 2000. Topics in History.** (3) Treatment of an historical topic. May be repeated for credit as topics vary. *(Yearly)*

**HIST 2100. Introduction to Historical Studies.** (3) A writing-intensive experience involving primary and secondary sources, library research, historical evidence, citation, rhetoric and modern methodology. *(Spring)*

(245) **HIST 2101. American Business History.** (3) A survey of the origins, methods, and goals of modern business enterprise. Lectures emphasize the social history of the American business community and the relation between public policy and economic growth. Discussion emphasizes current economic problems and policies. *(Spring)*

**HIST 2110. Technology and Science in Society I: To 1776.** (3) The history of science and technology up to the British industrial revolution of the 18th century. The impact of scientific and technological change on Western societies and societal influence on the development of science and technology. Scientific and technical background is not a prerequisite. *(Fall)*

**HIST 2111. Technology and Science in Society II: Since 1776.** (3) The history of science and technology in Western society since the industrial revolution of the 18th century. The interconnections of science and technology with society, with particular emphasis on the United States. Designed for all students, regardless of scientific and technical background. *(Spring)*

**HIST 2120. American Military History.** (3) A survey of the development and organization of military practice from the colonial period to the present. *(Spring)*

(349) **HIST 2130. Introduction to Historic Preservation.** (3) Techniques available in the United States to identify and preserve historically significant structures, buildings, sites, areas and objects. *(Fall)*

(329) **HIST 2140. Disease and Medicine in History.** (3) Development of medical knowledge, trends in the techniques and availability of medical and psychiatric care, and the impact of disease and medicine on selected problems in world history. *(Spring)*

(330) **HIST 2141. American Medical History.** (3) History of American medicine and the relationship between medical thought and changing cultural beliefs. *(Fall)*

(389) **HIST 2150. History of Women in the U.S.** (3) Changing experience, status and role of women from colonial times to the present. *(On demand)*

**HIST 2200. Asian Civilization.** (3) An investigation of the philosophical, religious, social, political and economic foundations of the great Asian civilizations. Emphasis will be placed on understanding those traditions that influence Asian societies today and a comparison of those traditions to Western traditions. *(Fall)*

**HIST 2201. History of Modern Asia.** (3) Focus on the rise of modern Asia from the period just prior to the armed intervention of Western European nations. Emphasis will be placed on the impact of imperialism, colonialism and the rise of Asian nationalism on Asian societies. *(Spring)*

(123) **HIST 2205. Introduction to Latin American History. (3)** Cultural, political and economic developments in Latin America. *(Yearly)*

**HIST 2210. Pre-Colonial Africa. (3)** A survey of major political, economic and religious developments in Sub-Saharan Africa from earliest times to the early 19th century. *(Fall)*

**HIST 2211. Modern Africa. (3)** A survey of major developments in 19th and 20th century Sub-Saharan Africa, with emphasis on the European conquest, the colonial period, and the triumph of modern African nationalism. *(Spring)*

(311) **HIST 2250. Russian History from Earliest Times to 1801. (3)** Development of the Russian people, focusing upon the rise and fall of the Kievan state, the impact of the period of Tartar domination, the rise of Moscovy, and the growth of the Tsarist autocracy before the reign of Alexander I. *(Alternate years)*

(312) **HIST 2251. Russian History from 1801 to 1917. (3)** Decline and fall of the Tsarist empire, focusing upon the efforts of the last four rulers to perpetuate the monarchy and upon the factors working against the effort. *(Alternate years)*

(313) **HIST 2252. Russian History from 1917 to the Present. (3)** Development of Soviet Russia, focusing upon the October 1917 Revolution, Lenin's years of rule, Stalin's rise to power, the Five Year Plan and the years since World War II. *(Alternate years)*

(361) **HIST 2260. Britain to 1688. (3)** British history with emphasis on institutional, cultural, economic and imperial developments. *(Alternate years)*

(362) **HIST 2261. Britain since 1688. (3)** Continuation of HIST 2260 with some treatment of the British Empire. *(Alternate years)*

**HIST 2270. France, 1643-1815. (3)** A survey from the development of royal absolutism to the French Revolution and Napoleonic conquests. *(Alternate years)*

(367) **HIST 2271. France, 1815 to the Present. (3)** A study of France through the period of the Paris Commune, the two World Wars, and the current crisis of the modern world. *(Alternate years)*

(368) **HIST 2280. The Emergence of Modern Germany. (3)** A political survey to the mid-19th century, emphasizing the dual role of Prussia and Austria in the German world. *(Alternate years)*

(369) **HIST 2281. Twentieth Century Germany. (3)** The Wilhelmine Empire, the Wiemar Republic, the Third Reich and the two Germanies. *(Alternate years)*

(491) **HIST 2400. History Internship. (1-3)** Applied historical techniques utilizing modern methodology and experiences in off-campus institutions or on historical sites. May be repeated for credit. *(On demand)*

(250) **HIST 2700. Honors in History. (3)** Prerequisite: consent of instructor. Treatment of historical topic. May be repeated for credit as topics vary. *(On demand)*

**Courses for Advanced Undergraduates**

(350) **HIST 3000. Topics in History. (3)** Treatment of historical topic. May be repeated for credit as topics vary. *(Yearly)*

(303) **HIST 3101. History of Greece. (3)** From the beginning of civilization in Greece to 332 B.C. *(Alternate years)*

(304) **HIST 3102. History of Rome. (3)** From the beginning of civilization in Italy to 284 A.D. *(Alternate years)*

(301) **HIST 3105. Early Middle Ages, 300 A.D.-1100 A.D. (3)** Europe from the decline of the Roman Empire to the 12th century; spread of Christianity, the Frankish Monarchy, and the Crusades. *(Alternate years)*

(302) **HIST 3106. The High and Later Middle Ages, 1000 A.D.-1400 A.D. (3)** The revival of towns, growth of centralized monarchies, and the Black Death and its consequences. *(Yearly)*

(307) **HIST 3107. Renaissance Europe. (3)** Social, economic and political consequences of the Cultural awakening in Italy. *(Yearly)*

(308) **HIST 3108. Reformation Europe 1400-1650. (3)** The Protestant Reformation and its impact on Western Europe. *(Alternate years)*

(306) **HIST 3110. The European World in the Era of the French Revolution. (3)** The role of the Enlightenment, the French Revolution and Napoleon in the destruction of the Old Regime and the creation of modern political and social traditions. *(Alternate years)*

(309) **HIST 3115. Nineteenth Century Europe, 1814-1914. (3)** Political developments in European history from the Congress of Vienna: liberalism, nationalism, imperialism and the diplomacy leading to World War I. *(Alternate years)*

(310) **HIST 3116. Twentieth Century Europe, 1914 to the Present. (3)** Causes and results of World War I, rise of new governments, collapse of collective security, World War II and the postwar period. *(Alternate years)*

(314) **HIST 3130. History of Socialism and Communism. (3)** Socialism before the establishment of the First International, followed by analysis of the socialist and communist movements until the present. *(Alternate years)*

(316) **HIST 3134. European Intellectual History Since 1789. (3)** Leading thinkers in the development of philosophic, scientific and political thought. *(Alternate years)*

(320) **HIST 3141. World War I. (3)** World War I from the outbreak of hostilities to the peace settlement. Impact on the combatant nations and subsequent development of the World. *(Yearly)*

(315) **HIST 3142. A Military History of World War II. (3)** Major campaigns of World War II with emphasis upon the European theater of operations. *(Yearly)*

(317) **HIST 3143. World War II: The Pacific Theater. (3)** A description and analytical survey of the military campaigns in the Pacific theater of operations. *(Yearly)*

(370) **HIST 3147. The Third Reich. (3)** The origins of Nazism, the seizure of power, Hitler's domestic and foreign policy, and the collapse in World War II. *(Yearly)*

(332) **HIST 3151. South Africa. (3)** Population groups of South Africa from earliest times to the present. Emphasis on the assertion and maintenance of European rule in the 19th and 20th centuries. *(Yearly)*

(336) **HIST 3161. China in Revolution. (3)** The last 200 years of history with emphasis on the history of the Chinese Revolution and the post-1949 developments. *(Alternate years)*

(337) **HIST 3165. History of Modern Japan. (3)** Japan from about 1600 to the present covering Japan's intellectual, social and economic transformation from an agricultural society to an industrial power. *(Alternate years)*

(338) **HIST 3169. The West in Asia: Imperialism, Colonialism and Modern Nationalism. (3)** Western expansion in Asia beginning with the East India companies with concentration on modern imperialism in the 19th and 20th centuries. *(Alternate years)*

(340) **HIST 3171. History of Argentina. (3)** Argentine history from the late colonial period to the present. Emphasis on changes in Argentine economic and social structures and their relation to political developments. *(Alternate years)*

(346) **HIST 3176. History of Mexico. (3)** A survey of Mexican history from pre-Columbian times to the present. Special emphasis will be given to the Spanish conquest, the colonial economy, the independence period, the revolution, and relations with the United States. *(Alternate years)*

(347) **HIST 3177. The Cuban Revolution. (3)** An examination of the economic and political forces that led to the Cuban revolution. Significant background material from the 19th and early 20th centuries will be presented in addition to an analysis of the revolution and post-revolutionary events. *(Alternate years)*

(343) **HIST 3179. The United States and Latin America. (3)** Relations between the United States and Latin America. Growth of U.S. economic and political interest in Latin America and the impact of U.S. influence in that region. *(Alternate years)*

**HIST 3180. Slavery in the Americas. (3)** Examines the roles of Europe, Africa, and the colonies and nations in North and South America in the international slave trade and slave system. Attention will be given to relationships among regions and cultures, effects of slavery on each region, and the development of culturally different systems of slavery in the Americas. *(Alternate years)*

(371) **HIST 3201. Colonial America. (3)** Colonial history from the discoveries to 1763. *(Fall)*

(372) **HIST 3202. The American Revolution and Early Nation. (3)** The achievement of independence and the formation of a national government, 1763-1800. *(Spring)*

(375) **HIST 3211. Civil War and Reconstruction, 1860-1877. (3)** The American people in war and the postwar adjustment. Emphasis on the political, social and economic conditions of the North and South during the Civil War and Reconstruction period. *(Alternate years)*

(379) **HIST 3212. History of the South to 1865. (3)** The South from colonial origins through the Civil War. Emphasis on the political and cultural developments which ultimately led the South to secession and the creation of a distinct Southern nation in the confederacy. *(Yearly)*

(380) **HIST 3213. History of the South since 1865. (3)** Southern history from Reconstruction to the present. Emphasis on race and class relations as the South copes with change. Special attention to the Civil Rights Movement, industrialization and urbanization. *(Yearly)*

(385) **HIST 3214. The Urban South. (3)** Development of the Southern city from the colonial period to the present with emphasis on the agricultural base of urban life, the biracial character, and early economic dependence upon the North. *(Alternate years)*

(387) **HIST 3241. United States Social History to 1860. (3)** Ideas, groups and institutions that shaped early America, with emphasis upon the changes in family, religion, community and class. *(Alternate years)*

(388) **HIST 3242. United States Social History since 1860. (3)** Ideas, groups and institutions that evolved from the Civil War to the present, with emphasis upon the formation of modern-day American society. *(Alternate years)*

**HIST 3250. The Gilded Age: The United States 1977-1901. (3)** An intensive study of the making and meaning of a modern industrial society in the U.S. Emphasis is on cultural and political developments in the emerging "machine age." *(Yearly)*

(377) **HIST 3251. United States in the 20th Century, 1901-1932. (3)** Political, economic, social and intellectual aspects of American democracy from 1901 to the Great Depression. Special emphasis on the impact of industrialization, American reform and the entry of the United States into the international arena. *(Fall)*

(378) **HIST 3252. United States in the 20th Century, 1932-Present. (3)** Political, economic, social and intellectual aspects of American democracy from the New Deal to the Great Society. Special emphasis on the New Deal and post-New Deal reform as well as America's role in world affairs. *(Spring)*

(386) **HIST 3256. United States Foreign Relations, 1901 to the Present. (3)** American diplomatic history from the administration of Theodore Roosevelt to the present. Special emphasis on the interaction between domestic, economic, political and social changes and the formulation of American foreign policy. *(Alternate years)*

(381) **HIST 3259. Radicalism and Reform in the U.S. (3)** Radical and reform efforts from the Revolutionary War to the present. Emphasis on the development of the radical and reform traditions and their interaction through two centuries of American history. *(Yearly)*

(382) **HIST 3261. The Civil Rights Era. (3)** Examination of the struggle for racial equality, particularly in the South, from World War II through the 1960's emphasizing the nature and tactics of black leadership, white resistance, federal involvement, results, and the unfinished agenda. *(Spring)*

(383) **HIS 3281. American Cities. (3)** U.S. urban history. The city as a physical place, as a socio-political environment and as a cultural center. Emphasis on the social developments caused by urbanization. *(Alternate years)*

(384) **HIST 3284. Crime and the Police. (3)** Historical development of criminal behavior, criminal law, the criminal courts, the police and the penitentiary system. *(Alternate years)*

(393) **HIST 3288. The Frontier in United States History. (3)** Influence of the frontier on the historical development of the U.S. Emphasis on the trans-Mississippi Western United States. *(Alternate years)*

(391) **HIST 3295. History of North Carolina to 1865. (3)** Emphasis on the colonial and on the constitutional, educational and economic developments of the antebellum period. *(Fall) (Evenings)*

(392) **HIST 3296. History of North Carolina Since 1865. (3)** Social, political and economic changes that have made modern North Carolina. *(Spring) (Evenings)*

(350) **HIST 3700. Honors in History. (3)** Prerequisite: consent of instructor. Treatment of historical topic. May be repeated for credit as topics vary. *(Yearly)*

(450) **HIST 3799. Senior Honors Thesis. (3)** Prerequisite: consent of the instructor. The preparation and presentation of an acceptable honors thesis or its equivalent. *(On demand)*

(351) **HIST 3800. Independent Projects in History. (3)** Prerequisite: consent of instructor. Individual research or readings on an historical topic. May be repeated for credit with consent of the coordinator or instructor. *(On demand)*

**Courses for Advanced Undergraduates and Graduate Students**

**HIST 4000. Problems in American History. (3) (3G)** Prerequisite: HIST 2100 or permission of the Department. A colloquium designed around a problem in American history, requiring reading, discussion, reports and a major paper. May be repeated for credit as topics vary. *(Fall, Spring) (Evenings)*

**HIST 4001. Problems in European History. (3) (3G)** Prerequisites: HIST 2100 or permission of the Department. A colloquium designed around a problem in European history, requiring reading, discussion, reports and a major paper. May be repeated for credit as topics vary. *(Yearly, Summer) (Evenings)*

**HIST 4002. Problems in Non-Western History. (3) (3G)** Prerequisite: HIST 2100 or permission of the Department. A colloquium designed around a problem in non-Western history, requiring reading, discussion, reports and a major paper. May be repeated for credit as topics vary. *(Yearly) (Evenings)*

**HIST 4100. The Nature of Historical Study. (3) (3G)** The historian and the historian's resuppositions, methods and objectives, and their impact on the development of historical literature. *(Alternate years)*

# Department of Mathematics

*Chairperson:* Professor Quinn
*Professors:* Goodrum, Lambert, Leiva, T.R. Lucas, Nixon, Solian, Weinstock
*Associate Professors:* Anderson, Burnap, Houston, Johnson, Papadopoulos, Reiter, Shafer, Stavrakas, Wichnoski
*Assistant Professors:* Attele, Avrin, Chen, Kazemi, Kumar, T.G. Lucas, Norman, Oh, Prichard, Roth, Royster, Singh, Stewart, Tiwari, Willis, Wright
*Lecturers:* Kohn, Orinson, Priebe, N. Royster, Schoeps, Twery

Mathematics has important applications to numerous areas ranging from economics and other social sciences to physics and engineering. It is a challenging and interesting area to study in its own right with a broad and varied curriculum.

The Department offers majors leading to the B.S. and B.A. degrees and a minor in mathematics. Students considering a major in mathematics should take at least four years of high school mathematics, including at least one year beyond Algebra II. (Only well-prepared students will be permitted to enroll in MATH 1141 without first taking MATH 1103.) While excessive specialization at the undergraduate level is not encouraged, students may choose their upper-division mathematics electives to emphasize statistics, operations research, or applied mathematics. Good students graduating with a bachelor's degree in mathematics should find themselves well prepared for a career in business or industry, especially if they have chosen to concentrate on some of the more applied areas in the program and have selected a minor concentration in an area of application such as economics, business or computer science. Students preparing for careers in industry or business should consider participating in the Department's Cooperative Education Program. Students completing the B.S. curriculum will be well prepared for graduate work in the mathematical sciences.

At the graduate level, the Department offers programs leading to the M.A. degree in mathematics and in mathematics education. The M.A. degree in mathematics develops breadth and depth in the field and provides preparation for careers in industry, and teaching at junior or community colleges and for further study at the doctoral level. The M.A. degree in mathematics education provides career advancement opportunities for teachers, preparation for junior or community college teaching, or further work at the doctoral level in mathematics education. (See pages 406-411 in this *Catalog*.)

**Teacher Certification in Mathematics.** Students preparing for certification to teach mathematics in secondary school (grades 9-12) will major in mathematics and should follow the suggested curriculum on page 154.

## BACHELOR OF ARTS

A major in mathematics for the B.A. degree consists of a minimum of 33 hours of approved mathematics courses, including MATH 1141, 1142, 2141, 2163, 2164, and 2171; 12 hours of approved courses numbered 3000 or above; and MATH 3688 and 3689.

A major in mathematics also requires CSCI 1100 and an elective minor consisting of at least 18 hours of approved courses in an area outside the Mathematics Department. All students must meet the general education requirements of The University.

Students majoring in mathematics must have a grade point average of at least 2.0 in each of the following categories: (1) all courses applied toward the degree, (2) all mathematics courses applied toward the degree or numbered above 2000, and (3) all upper-division mathematics courses taken.

## BACHELOR OF SCIENCE

A major in mathematics for the B.S. degree consists of a minimum of 39 semester hours of approved mathematics courses. In addition to the requirements for the B.A. degree, the major in mathematics for the B.S. degree requires completing six additional hours of approved mathematics courses numbered 3000 or above including MATH 3141, 3142, and at least one course from among MATH 3123, 4163, 4164, 4181 and 5143; as well as a minimum of 11 hours of science courses.

Students majoring in mathematics must have a grade point average of at least 2.0 in each of the following categories: (1) all courses applied toward the degree, (2) all mathematics courses applied toward the degree or numbered above 2000, and (3) all upper-division mathematics courses taken.

## MATHEMATICS MINOR

A minor in mathematics requires MATH 1141, 1142, and 2164; at least one additional course numbered 2000 or above, and at least one course numbered 3000 or above; and a minimum grade point average of 2.0 in all mathematics courses applied to the minor or above the 2000 level.

## HONORS PROGRAM IN MATHEMATICS

The purpose of the honors program in mathematics is to stimulate the imagination and deepen the understanding of students by encouraging independent study, and to provide recognition of exceptional achievements in mathematics. Students who complete the requirements of the program graduate with honors in mathematics.

*Admission.* Entrance to the Mathematics Department Honors Program is granted by the Mathematics Honors Committee, based on the following minimum requirements: (1) junior or senior standing; (2) at least 20 hours in mathematics, including MATH 1141, 1142, 2141, 2171, 2163, and 2164; and (3) a grade point average of not less than 3.0 in mathematics courses and in all University courses.

Students must apply to the Mathematics Honors Committee for admission to the program, and if admitted, must select a mathematics faculty member who is willing to serve as a honors adviser. The Honors Committee recommends students admitted to the program to the University Honors Council for formal admission to honors candidacy. (In order to graduate with honors The University requires that students be admitted to honors candidacy at least two semesters before graduation.)

*Courses.* A Junior Honors Seminar (MATH 3790) and a Senior Honors Tutorial (MATH 3791) are offered, both of which may be repeated for credit.

*Honors Calculus Course.* While admission to the Honors Program requires junior or senior standing, a two-semester Honors Calculus sequence is available to promising freshmen and sophomores. For more information, contact the Department of Mathematics.

*Certification Requirements.* The requirements for graduation with honors are: (1) completion of all requirements for a Bachelor of Science degree in mathematics with a grade point average of 3.00 or better; (2) a grade point average of 3.25 or better in all mathematics courses, and a GPA of 3.50 or better in all mathematics honors courses; (3) completion of at least six hours of Senior Honors Tutorial (MATH 3791) with a GPA of 3.50 or better, culminating in an honors thesis approved by the Mathematics Honors Committee; (4) recommendation by the Mathematics Honors Committee to the University Honors Council that the student graduate with honors.

Either the student or the Department may withdraw the student from the Department Honors Program. If the date for dropping courses has passed when the student leaves the program, the student must complete any courses currently in progress in order to receive passing grades in the courses.

## COOPERATIVE EDUCATION PROGRAM

A student may participate in the Mathematics Cooperative Education Program in either the parallel or alternate track. The parallel track combines academic study and cooperative experience during the same semester while the alternate track alternates semesters totally devoted to work with semesters totally devoted to academic study. Students in the Mathematics Cooperative Education Program must participate in a minimum of two semesters in the program. Students interested in participating in the program should contact the Coordinator of Cooperative Education, Department of Mathematics, for further information.

## RECOMMENDED CURRICULUM FOR THE MATHEMATICS MAJOR LEADING TO THE B.A. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| MATH 1141 | 4 | MATH 1142 | 4 |
| English 1101 | 3 | English 1102 | 3 |
| GOAL VI | 3 | Computer Science 1100 | 3 |
| Language (or Elective) | 4 (3) | Language (or Elective) | 4 (3) |
| | 14 (13) | | 14 (13) |

### Sophomore Year

| | | | |
|---|---|---|---|
| MATH 2141 | 3 | MATH 2171 | 3 |
| MATH 2163 (or 2164) | 3 | MATH 2164 (or 2163) | 3 |
| GOAL V | 3 | GOAL I: (W) or Elective | 3 |
| Laboratory Science | 4 | Laboratory Science | 4 |
| Minor | 3 | Minor | 3 |
| | 16 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| MATH 3688 | 0 | MATH 3xxx or 4xxx | 3 |
| MATH 3xxx or 4xxx | 3 | Minor | 3 |
| Minor | 3 | GOAL III | 3 |
| GOAL VI | 3 | GOAL V | 3 |
| Electives | 3 | GOAL I: (W) or Elective | 3 |
| Laboratory Science | 4 (3) | | |
| | 16 (15) | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| MATH 3xxx or 4xxx | 3 | MATH 3689 | 1 |
| Minor | 3 | MATH 3xxx or 4xxx | 3 |
| Electives | 10 | Minor | 3 |
| | | Electives | 6-8 |
| | 16 | | 13-15 |

**Note:** Total credits must equal at least 120.

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## RECOMMENDED CURRICULUM FOR THE MATHEMATICS MAJOR LEADING TO THE B.S. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| MATH 1141 | 4 | MATH 1142 | 4 |
| English 1101 | 3 | English 1102 | 3 |
| GOAL VI | 3 | Computer Science 1100 | 3 |
| Language (or Elective) | 4 (3) | Language (or Elective) | 4 (3) |
| | 14 (13) | | 14 (13) |

### Sophomore Year

| | | | |
|---|---|---|---|
| MATH 2141 | 3 | MATH 2171 | 3 |
| MATH 2163 (or 2164) | 3 | MATH 2164 (or 2163) | 3 |
| GOAL V | 3 | GOAL I: (W) or Elective | 3 |
| Laboratory Science | 4 | Laboratory Science | 4 |
| Minor | 3 | Minor | 3 |
| | 16 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| MATH 3141 | 3 | MATH 3142 | 3 |
| MATH 3688 | 0 | Minor | 3 |
| Laboratory Science (or Elective) | 4 (3) | GOAL III | 3 |
| GOAL VI | 3 | GOAL V | 3 |
| Minor | 3 | GOAL I: (W) | 3 |
| Elective | 3 | | |
| | 16 (15) | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| *MATH 3xxx or 4xxx | 6 | MATH 3689 | 6 |
| Minor | 3 | MATH 3xxx or 4xxx | 6 |
| Electives | 6 | Minor | 3 |
| | | Electives | 3-6 |
| | 15 | | 13-16 |

*At least one three-hour course to be selected from 3123, 4163, 4164, 4181 and 5143.

**Note:** Total credits must equal at least 120.

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## TYPICAL PROGRAM FOR THE MATHEMATICS MAJOR LEADING TO THE B.A. DEGREE WITH CERTIFICATION FOR SECONDARY SCHOOL TEACHING

### Freshman Year

| | | | |
|---|---|---|---|
| English 1101 | 3 | English 1102 | 3 |
| MATH 1141 | 4 | MATH 1142 | 4 |
| Psychology 1101 (GOAL VI) | 3 | Computer Science 1100 (Pascal) | 3 |
| Foreign Language 2201 | 4 | Foreign Language 2202 | 4 |
| History 1000 (GOAL III or GOAL VI) | 3 | | |
| | 17 | | 14 |

### Sophomore Year

| | | | |
|---|---|---|---|
| MATH 2141 | 3 | MATH 2171 | 3 |
| Education 2100 | 3 | Philosophy 2101 (GOAL V or I: W) | 3 |
| Psychology 2109 | 3 | Laboratory Science | 4 |
| Laboratory Science | 4 | MAED 3103 | 3 |
| GOAL V | 3 | Education 2110 | 3 |
| | 16 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| MATH 4109 | 3 | MATH 3181 | 3 |
| MATH 2164 | 3 | MATH 2163 | 3 |
| Education 3120 | 3 | MATH 5122 | 3 |
| Health Education 2200 | 3 | Education 3195 | 3 |
| MAED 3105 | 3 | Special Education 3160 | 3 |
| | 15 | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| MAED 5171 | 3 | Education 3490 (Internship) | 12 |
| Education 3196 | 3 | | |
| Reading 5250 | 3 | | |
| MATH 3xxx or 4xxx | 3 | | |
| Elective (Upper-level Writing Int.) | | | |
| | 15 | | 12 |

*Note: If the Lab Sciences are not a sequenced pair, such as CHEM 1101 and CHEM 1102, the three courses, 12 hours, must be taken instead of the two courses, 8 hours indicated. Courses other than those listed may be available to satisfy general education requirements. Deviations from the above MATH courses are possible, such as an upper-level geometry course instead of MATH 3181, or MATH 1220 or 1221 or 1222 instead of MATH 5122—with an upper-level MATH course added to obtain the 12 hours of upper-level MATH courses. Advisers or students who have questions about other possible alternatives should confer with the Department of Mathematics.*

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## MATHEMATICS (MATH)

### Courses for Undergraduates

150) **MATH 1050. Introductory Topics in Mathematics. (1-3)** Prerequisite: consent of the Department. Topics in introductory mathematics not included in the regular course offering. (May be repeated for additional credit as topics vary and with the approval of the Department.) *(On demand)*

101) **MATH 1101. Finite Mathematics. (3)** Prerequisite: high school algebra II and geometry. Review of high school algebra, elementary matrix algebra, systems of linear equations and inequalities, elementary linear programming; probability. *(Fall, Spring, Summer) (Evenings)*

**MATH 1102. Introduction to Mathematical Thinking. (3)** Logic, number theory, graph theory, game theory, mathematical modeling, recreational mathematics. Computers may be used. *(Fall, Spring)*

103) **MATH 1103. Precalculus Mathematics. (3)** Prerequisite: placement by Department of Mathematics. Functions and graphs, linear and quadratic functions, polynomial and rational functions, exponential and logarithmic functions, trigonometric identities. *(Fall, Spring, Summer) (Evenings)*

103A) **MATH 1104. Concepts of Trigonometry. (1)** Prerequisite: placement by the Department of Mathematics. Trigonometric functions and their graphs, trigonometric identities. (Credit not given for both Mathematics 1103 and 1104.) *(Fall, Spring) (Evenings)*

120) **MATH 1120. Calculus. (3)** Prerequisite: MATH 1101 or 1103. Elements of differential and integral calculus for polynomial, rational exponential and logarithmic functions, with applications to business and the social and life sciences. (May not be taken for credit if credit has been received for MATH 1141.) *(Fall, Spring, Summer) (Evenings)*

141) **MATH 1141. Differential and Integral Calculus I. (4)** Prerequisite: MATH 1103 with a grade of *C* or better or placement by the Department. Limits, continuity, differentiation and integration of rational, trigonometric, exponential and logarithmic functions, curve sketching, maxima and minima area. *(Fall, Spring, Summer) (Evenings)*

142) **MATH 1142. Differential and Integral Calculus II. (4)** Prerequisite: MATH 1141 with a grade of *C* or better. Applications of the integral, methods of integration; improper integrals, L'Hopital's rule, infinite series; conic sections; hyperbolic functions. *(Fall, Spring, Summer) (Evenings)*

122A) **MATH 1220. Elements of Statistics I (BUSN). (3)** Prerequisite: MATH 1101. Non-calculus based introduction to data summarization, binominal, Poisson and normal probability distributions, central limit theorem, estimation and testing for mean and variance using t, $X^2$ and F tables, simple linear regression, distribution free analysis. Special emphasis on applications to business. May not be taken for credit if credit has been received for MATH 1221 or 1222. *(Fall, Spring, Summer) (Evenings)*

122B) **MATH 1221. Elements of Statistics I (BIOL). (3)** Prerequisite: MATH 1101. The same topics as MATH 1220 with special emphasis on applications to the life sciences. May not be taken for credit if credit has been received for MATH 1220 or 1222. *(Fall, Spring)*

122C) **MATH 1222. Elements of Statistics I (SBS). (3)** Prerequisite: MATH 1101. The same topics as MATH 1220 with special emphasis on applications to the social and behavioral sciences. May not be taken for credit if credit has been received for MATH 1220 or 1221. *(Fall, Spring, Summer) (Evenings)*

123) **MATH 1223. Elements of Statistics II. (3)** Prerequisite: MATH 1220 or 1221 or 1222. A second course in statistics including such topics as two sample tests, contingency analysis, design of experiments, and regression analysis. *(Spring)*

250) **MATH 2050. Topics in Mathematics. (2-3)** Prerequisite: consent of the Department. Topics in mathematics elected to supplement regular offerings at the 2000 level. (May or may not count for a Math core course for the CSCI major.) May be repeated as additional credit as topics vary and with the approval of the Department. *(On demand)*

(211) **MATH 2111. Introduction to Operations Research. (3)** Prerequisite: MATH 1120 or 1141 and CSCI 1100. Modeling and graph theory with applications to linear programming, critical path analysis, transportation and allocation problems, and queueing theory. *(Spring) (Evenings)*

(221) **MATH 2121. Introduction to Probability. (3)** Prerequisite: MATH 1101 or 1103. Discrete sample spaces, probability, conditional probability, independent events, random variables, mean, variance, joint probability functions, independent random variables, covariance, correlation, binomial distribution. *(On demand)*

(222) **MATH 2122. Introduction to Statistics. (3)** Prerequisite: MATH 1141 or consent of the Department. A study of probability models, discrete and continuous random variables, inference about Bernoulli probability, inference about population mean, inference about population variance, the maximum likelihood principle, the minimax principle, Bayes procedures and linear models. *(Fall, Spring, Summer) (Evenings)*

(241) **MATH 2141. Differential and Integral Calculus III. (3)** Prerequisite: MATH 1142 with a grade of *C* or better. Polar coordinates, parametric equations, vectors in two and three dimensions, quadric surfaces, partial derivatives, multiple integrals, line integrals. *(Fall, Spring, Summer) (Evenings)*

(263) **MATH 2163. Introduction to Modern Algebra. (3)** Prerequisite: MATH 1141 with a grade of *C* or better or consent of the Department. Elementary properties of groups, rings, and fields. Many concrete examples of algebraic structures will be studied. *(Fall, Spring) (Evenings)*

(264) **MATH 2164. Matrices and Linear Algebra. (3)** Prerequisite: MATH 1141 with a grade of *C* or better or consent of the Department. Matrix algebra, systems of linear equations, vector spaces, linear transformations, inner products, determinants. *(Fall, Spring, Summer) (Evenings)*

(265) **MATH 2165. Discrete Structures. (3)** Prerequisite: MATH 2164. A study of discrete mathematical structures including groups, lattices, Boolean functions, graphs and trees with applications to computer science. *(Fall, Spring, Summer) (Evenings)*

(271) **MATH 2171. Differential Equations. (3)** Prerequisite: MATH 1142 with a grade of *C* or better. An introduction to ordinary differential equations including first order equations, general theory of linear equations, series solutions, special solutions, special equations such as Bessel's equation, and applications to physical and geometric problems. *(Fall, Spring, Summer) (Evenings)*

(450) **MATH 3050. Selected Topics in Mathematics. (2-3)** Prerequisite: consent of the Department. Topics selected to supplement regular offerings at the 3000 level in mathematics or statistics. May be repeated for credit with the approval of the Department. *(On demand)*

(311) **MATH 3111. Operations Research: Deterministic Models. (3)** Prerequisites: MATH 1142 and 2164. Linear, integer and dynamic programming, the simplex method and applications. *(Fall) (Evenings)*

(313) **MATH 3113. Operations Research: Probabilistic Models. (3)** Prerequisites: MATH 1142 and 2121. Stochastic processes, Markov chains, queueing theory, decision analysis and applications. *(Spring) (Evenings)*

(316) **MATH 3116. Graph Theory. (3)** Prerequisite: MATH 2164 or 2165 or consent of the Department. Paths, trees, connectivity, planarity, duality, colorability, enumerability, and vector spaces of graphs. Applications to such areas as computer algorithms, switching and coding theory, transportation networks and Markov processes. *(Fall) (Alternate years)*

(322) **MATH 3122. Probability and Statistics I. (3)** Prerequisite: MATH 2141 with a grade of *C* or better. Sample spaces, random variables, moment generating functions, some standard distributions, multivariate distributions, laws of large numbers, limit theorems. *(Fall) (Evenings)*

(323) **MATH 3123. Probability and Statistics II. (3)** Prerequisite: MATH 3122. Estimation, bias, consistency, efficiency, maximum likelihood estimates, sufficient statistics, testing, the power function, chi-square test, Kolmogorov-Smirnov test. *(Spring) (Evenings)*

(341) **MATH 3141. Advanced Calculus of One Variable. (3)** Prerequisites: MATH 2141 and 2164 with grades of *C* or better. Topology of the real line; continuity, uniform continuity, differentiability, integration, sequences and series of functions. *(Fall, Spring) (Evenings)*

(342) **MATH 3142. Advanced Calculus of Several Variables. (3)** Prerequisite: MATH 3141. Continuity and differentiability of functions of several variables, inverse and implicit function theorems, integration, Fubini's theorem, change of variables, the classical integral theorems of Gauss, Green and Stokes and their generalizations. *(Spring) (Evenings)*

(346) **MATH 3146. Introduction to Complex Analysis. (3)** Prerequisite: MATH 2141 with a grade of *C* or better. Analytic functions, complex integration, calculus of residues, conformal mapping. *(Spring) (Alternate years)*

(366) **MATH 3166. Combinatorial Mathematics. (3)** Prerequisite: MATH 2141. Permutations of distinct and non-distinct objects; generating functions for combinations, enumerators for permutations, recurrence relations; inclusion-exclusion principle, derangements, permutation groups, Polya's theory of counting. *(On demand)*

(371) **MATH 3171. Applied Mathematics I. (3)** Prerequisites: MATH 2141 and 2171 with grades of *C* or better. Separation of variables techniques for the classical partial differential equations of mathematical physics; Fourier series; Sturm-Liouville theory. *(Fall)*

(376) **MATH 3176. Numerical Analysis. (3)** Prerequisites: CSCI 1100, MATH 2141 and 2171. Numerical solution of initial value and boundary value problems in ordinary differential equations, direct and iterative methods of solving systems of equations. Selected problems will be programmed for computer solution. *(Spring) (Alternate years)*

(381) **MATH 3181. Fundamental Concepts of Geometry. (3)** Prerequisite: MATH 2164. Foundations of geometry, transformations, comparison of Euclidean and non-Euclidean geometries. *(Spring)*

(383) **MATH 3183. Intuitive Topology. (3)** Prerequisite: MATH 2141. Introduction to combinatorial topology; topology of Euclidean space, winding number, homotopy, fundamental group. *(On demand)*

**MATH 3551. Mathematics Cooperative Education Experience. (0)** Prerequisites: sophomore standing, a 3.00 GPA in mathematics and consent of the Department of Mathematics. The student will be employed in a manner that affords him/her the opportunity of using and enhancing mathematical knowledge and skills through practical experience. After completing MATH 3551, the student must take MATH 3652. MATH 3551 may be repeated with consent of the Department of Mathematics. *(On demand)*

**MATH 3652. Mathematics Cooperative Education Seminar. (1)** Prerequisite: MATH 3551. The student will give an exposition of his/her work experience in MATH 3551. An exposition of underlying theoretical concepts and related ideas may also be required. *(On demand)*

**MATH 3688. Mathematics Awareness Seminar. (0)** Prerequisite: junior standing. Visiting speakers, discussion of job opportunities and of selected topics in mathematics. *(Fall)*

**MATH 3689. Mathematics Project Seminar. (1)** Prerequisite: senior standing. Oral presentation by the student on an area of mathematics or a mathematical problem. *(Spring)*

(391) **MATH 3691. Seminar. (1-6)** Prerequisite: consent of the Department. Readings, study and discussion designed to develop the student's ability to study independently and to present results properly. *(On demand)*

(390H) **MATH 3790. Junior Honors Seminar. (3)** Prerequisite: consent of the Department. May be repeated once for additional credit with approval of the Department. *(On demand)*

(490H) **MATH 3791. Senior Honors Tutorial. (3)** Prerequisite: consent of the Department. Individual tutorials in which the student will pursue independent study and research in any area of mathematics under the direction of one or more faculty members. The project of the student will be planned to culminate in a research paper of original or expository nature. May be repeated for additional credit with the approval of the Department. *(On demand)*

**Courses for Advanced Undergraduates and Graduate Students**

(300) **MATH 4000. Topics in Foundations or History of Mathematics. (2-3) (2-3G)** Prerequisite: consent of the Department. Topics in the foundations or the history of mathematics selected to supplement regular course offerings in this area of mathematics. May be repeated for credit with approval of the Department. Credit for the M.A. degree in mathematics requires approval of the Department. *(On demand)*

(310) **MATH 4010. Topics in Decision Mathematics. (2-3) (2-3G)** Prerequisite: consent of the Department. Topics in decision mathematics selected to supplement regular course offerings in this area of mathematics. May be repeated for additional credit with the approval of the Department. Credit for the M.A. degree in mathematics requires approval of the Department. *(On demand)*

(320) **MATH 4020. Topics in Probability and Statistics. (2-3) (2-3G)** Prerequisite: consent of the Department. Topics in probability and statistics selected to supplement regular course offerings in this area of mathematics. May be repeated for credit with the approval of the Department. Credit for the M.A. degree in mathematics requires approval of the Department. *(On demand)*

(340) **MATH 4040. Topics in Analysis. (2-3) (2-3G)** Prerequisite: consent of the Department. Topics in analysis selected to supplement regular course offerings in this area of mathematics. May be repeated for credit with the approval of the Department. Credit for the M.A. degree in mathematics requires approval of the Department. *(On demand)*

(360) **MATH 4060. Topics in Algebra. (2-3) (2-3G)** Prerequisite: consent of the Department. Topics in algebra selected to supplement regular course offerings in this area of mathematics. May be repeated for credit with the approval of the Department. Credit for the M.A. degree in mathematics requires approval of the Department. *(On demand)*

(370) **MATH 4070. Topics in Applied Mathematics. (2-3) (2-3G)** Prerequisite: consent of the Department. Topics in applied mathematics selected to supplement regular course offerings in this area of mathematics. May be repeated for credit with the approval of the Department. Credit for the M.A. degree in mathematics requires approval of the Department. *(On demand)*

(380) **MATH 4080. Topics in Geometry and Topology. (3) (3G)** Prerequisite: consent of the Department. Topics in geometry or topology selected as to supplement regular course offerings in this area of mathematics. May be repeated for credit with approval of the Department. Credit for M.A. degree in mathematics requires approval of the Department. *(On demand)*

(409) **MATH 4109. History of Mathematical Thought. (3) (3G)** Prerequisite: consent of the Department. A study of the development of mathematics in its historical setting from the earliest beginnings to modern times. Not approved for the M.A. in mathematics degree. *(Fall) (Evenings)*

(411) **MATH 4111. Linear Programming. (3) (3G)** Prerequisites: MATH 3111 and CSCI 1100. The mathematical formulation and solution of linear programming problems. Topics include: the simplex method and its variations, sensitivity and parametric analysis, duality, and applications. A project will be required of all graduate students. *(Spring-'91)*

(412) **MATH 4112. Non-linear Programming. (3) (3G)** Prerequisites: CSCI 1100, MATH 3111 and 2141. Basic unconstrained optimization problems, search techniques, some discussion of rates of convergence and an introduction to constrained optimization. Computer implementation and testing of optimization algorithms will be required. A project will be required of all graduate students. *(Spring-'90)*

(413) **MATH 4113. Game Theory. (3) (3G)** Prerequisites: MATH 3111 and one of MATH 2122, 3122, or 3113. The theory of zero-sum matrix games, min-max theorem, optimal strategies, symmetric games, economic models, infinite, separable, polynomial, multi-stage, general-sum and n-person games. A project will be required of all graduate students. *(Spring-'88)*

(414) **MATH 4114. Dynamic Programming. (3) (3G)** Prerequisites: CSCI 1100, MATH 3111, and one of MATH 2122, 3122 or 3113. The identification of dynamic programming problems and their solution in terms of recurrence relations. Elementary path problems, resource allocation, shortest path, travelling salesmen problem, discrete-time optimal control, replacement models and inventory systems. A project will be required of all graduate students. *(Spring-'89)*

(423) **MATH 4123. Applied Statistics I. (3) (3G)** Prerequisites: MATH 2164 with a grade of *C* or better and junior standing; or consent of the Department. Review of stochastic variables and probability distributions, methods of estimating a parameter, hypothesis testing, confidence intervals, contingency tables; linear and multiple regression, time series analysis. *(Fall) (Evenings)*

(424) **MATH 4124. Applied Statistics II. (3) (3G)** Prerequisite: MATH 4123. One way analysis of variance; multiway classification; randomized complete-block designs, nested or hierarchical designs, Latin squares, factorial experiments; design of experiments. *(Spring) (Evenings)*

(461) **MATH 4161. Number Theory. (3) (3G)** Prerequisite: MATH 2163 with a grade of *C* or better or consent of the Department. A study of the elements of classical number theory including divisibility, congruences, diaphantine equations, prime numbers and their distribution, quadratic reciprocity, number-theoretic functions, and famous unsolved problems. Not approved for the M.A. in mathematics degree. *(Fall) (Alternate years)*

(463) **MATH 4163. Modern Algebra I. (3) (3G)** Prerequisite: MATH 2163 or consent of the Department. Groups, rings, integral domains, fields. *(Fall) (Alternate years)*

(464) **MATH 4164. Modern Algebra II. (3) (3G)** Prerequisite: MATH 4163 or consent of the Department. Vector spaces over arbitrary fields, linear transformations, canonical forms, multilinear algebra. *(Spring) (Alternate years)*

(465) **MATH 4165. Numerical Linear Algebra. (3) (3G)** Prerequisites: CSCI 1100, MATH 2164 and 2171. Direct methods of solving linear systems, Gaussian elimination, triangular decomposition, condition numbers and accuracy of solutions, the algebraic eigenvalue problem, power and inverse power methods, Hessenberg form and the QR algorithm. Iterative methods for solving large sparse matrix systems, Jacobi, Seidel and SOR methods. Selected problems will be programmed for computer solution. *(Fall) (Alternate years)*

(476) **MATH 4176. Numerical Methods in Partial Differential Equations. (3) (3G)** Prerequisites: CSCI 1100, MATH 2141, 2164 and 2171; all with a grade of *C* or better. The physical basis for partial differential equations of elliptic, parabolic and hyperbolic types. Finite difference methods, initial value problems, special topics. Software packages, ELL PACK, programming techniques. *(Spring) (Alternate years)*

(481) **MATH 4181. Introduction to Topology. (3) (3G)** Prerequisite: MATH 3183 or consent of the Department. Topics from set theory and point set topology such as cardinality, order, topological spaces, metric spaces, separation axiom, compactness and connectedness. *(Spring) (Alternate years)*

(491) **MATH 4691. Seminar. (1-6) (1-6G)** Prerequisite: consent of the Department. Individual or group investigation and exposition of selected topics in mathematics. *(On demand)*

(492) **MATH 4692. Seminar. (1-6) (1-6G)** Prerequisite: consent of the Department. A continuation of MATH 4691. *(On demand)*

COURSES AT THE 5000 LEVEL ARE PRIMARILY FOR GRADUATE STUDENTS. HOWEVER, ADVANCED UNDERGRADUATES MAY ALSO TAKE THESE COURSES FOR UNDERGRADUATE CREDIT. FOR COMPLETE COURSE DESCRIPTIONS, SEE PAGE 408.

## MATHEMATICS EDUCATION (MAED)

These courses are primarily for students seeking teacher certification, certificate renewal, or certificate upgrading. None of these courses may be used to satisfy the mathematics requirements for a major in mathematics. They may be accepted as non-math electives for B.A. and B.S. degrees in mathematics and for the M.A. in mathematics education.

**Courses for Undergraduates**

(201) **MAED 2101. Mathematics for the Elementary School Teacher I. (4)** Prerequisite: consent of the Department. An intuitive development of the real number system with emphasis on the principles of teaching and learning elementary mathematics; sets and set operations; systems of numeration; arithmetic operations. Laboratory activities and practical teaching experience in an elementary classroom. *(Fall, Spring) (Evenings)*

(202) **MAED 2102. Mathematics for the Elementary School Teacher II. (4)** Prerequisite: MATH 2101. Mathematical systems; the study of metric and nonmetric geometry; probability and statistics; relations, functions and their graphs. Activities and applications related to elementary and intermediate goals. Practical teaching experience in an intermediate classroom. *(Fall, Spring) (Evenings)*

**MAED 2103. Teaching Problem Solving Through Computers and Calculators. (3)** Prerequisite: MAED 2102 or consent of the Department. Problem solving in mathematics using computer and calculators in the classroom; calculators in the mathematics curriculum; microcomputer hardware and courseware in mathematics; LOGO and BASIC; data analysis, statistics and probability. *(Fall, Spring, Summer) (Evenings)*

(300) **MAED 3000. Topics in Mathematics Education, K-6. (1-6)** Prerequisite: consent of the Department. Special topics in mathematics education for grades K-6. May be repeated for credit as topics vary. *(On demand)*

(340) **MAED 3040. Topics in Mathematics Education, Middle Grades. (1-6)** Prerequisite: consent of the Department. Special topics in mathematics education for middle grades. May be repeated for credit as topics vary. *(On demand)*

(370) **MAED 3070. Topics in Mathematics Education, Secondary. (1-6)** Prerequisite: consent of the Department. Special topics in mathematics education at the secondary level. May be repeated for credit as topics vary. *(On demand)*

(303) **MAED 3103. Computer Programming and Algorithmics in Mathematics Education. (3)** Prerequisite: MAED 2102 or consent of the Department. Computer programming as a context for teaching and learning mathematics with emphasis on algorithmic processes. Topics include: introduction to microcomputers, BASIC and LOGO computer languages, pedagogical and curricular issues related to programming and algorithmics in school mathematics. *(Spring)*

(305) **MAED 3105. Teaching Geometry Through Deductive and Inductive Logic. (3)** Prerequisite: MAED 2102 or consent of the Department. A study of the Euclidean postulates and theorems in 2-space and 3-space, including some non-Euclidean variations. Emphasis on methods of teaching problem solving through formal proofs, deduction and induction. *(Spring)*

(341) **MAED 3141. Algebra and Problem Solving for Middle School Teachers. (3)** Prerequisites: MATH 1103 and 2102. An overview of algebra from middle grades through college with emphasis on mastering algebraic concepts, skills, and teaching techniques. Topics include: functions, analytic geometry, vectors and matrices, and field properties of the real numbers. Observations, teaching experiences, and activities in junior high school and high school algebra. *(Fall)*

COURSES AT THE 5000 LEVEL ARE PRIMARILY FOR GRADUATE STUDENTS. HOWEVER, ADVANCED UNDERGRADUATES MAY ALSO TAKE THESE COURSES FOR UNDERGRADUATE CREDIT. FOR COMPLETE COURSE DESCRIPTIONS, SEE PAGE 411.

# Department of Performing Arts

*Chairperson:* To be named
*Professors:* Booth, Mathis
*Associate Professors:* Appleton, Beasley, Croghan, Dailey, Dillard, Harding, Mosley, Rackley, Sofras, Turner, Zimmermann
*Assistant Professor:* Hubbard
*Lecturers:* Marrash-Minnerly, Meyer, Osborne, Peterson

The Department of Performing Arts offers degree programs for majors and courses for non-majors in the areas of dance, music and theatre. The dance area offers courses in ballet, modern dance and jazz, as well as lecture classes in dance history and dance education. Offerings in music range from traditional fare such as theory, music appreciation, and private lessons (applied music) to more innovative courses such as History of Rock Music, the Evolution of Jazz, and Jazz Improvisation. Students interested in theatre may choose courses from the full range of theatre production—acting, directing or design. Traditional lecture classes in theatre history are available, as well as special classes in puppetry. All three areas offer a variety of performance experiences for academic credit, such as musical ensembles, theatre and musical productions, and dance recitals.

All performing arts classes and performances are held in the Rowe Arts Center. The facility contains two theatres, a recital hall, two dance studios, a listening laboratory, and various specialized classroom spaces and faculty offices.

A major in dance, music or theatre provides the student with a basic education within a liberal arts context, as opposed to highly specialized conservatory training. Occasionally graduates move directly into the profession as performers, designers or teachers, but more commonly opt for advanced training in graduate programs or apprenticeships with professional organizations. Some performing arts majors use their undergraduate experience as a springboard to other areas such as arts management, law school or private business.

## BACHELOR OF CREATIVE ARTS (BCA)

**General Requirements for All Majors.** All majors—dance, music, and theatre—are required to enroll in courses that satisfy the six Goals of UNCC Education (see pages 73-77). Students enrolled prior to the establishment of this requirement must, in addition to major course requirements, take English 1101 and 1102, and at least 30 hours of electives outside the Department of Performing Arts. A total of 120 hours is required for graduation with the BCA.

**Reviews.** A committee of at least three faculty members will review with the student the work of each major having less than a 2.50 GPA at the end of the semester during which the student completes his/her 30th credit hour. The purpose of the review is to evaluate the potential of the student in terms of his/her goals in the major field of study. Students who show no evidence of development will be encouraged to alter their goals.

The committee will again review the student's progress near the end of the semester during which he/she expects to complete the 60th credit hour. The committee will determine that the student should continue in the program, that he/she should be withdrawn from BCA degree candidacy, or that he/she must be reviewed again after a year. The Chairperson will inform the student in writing of the committee's recommendation.

**DANCE.** A major in dance leading to the BCA degree consists of 48 semester hours of dance including six semesters of modern dance, six semesters of ballet, two semesters of jazz, and two semesters of dance history. Majors are also required to take courses in improvisation, ideokinesiology, and creative dance, and to rehearse and perform with the Dance Ensemble during every semester of residence.

**Teacher certification** (K-12) is available in dance. Students seeking certification in addition to the BCA degree should declare this intent to the dance certification liaison person by the first semester of the sophomore year. A later decision to seek certification along with the BCA degree may result in a graduation date delayed by one or more semesters.

**MUSIC.** A major in music leading to the BCA consists of 47 semester hours of music including music appreciation, four semesters of structure and style, eight semesters of private instruction on the student's principal instrument or voice, and eight semesters of ensemble. Each major must enroll in applied piano until the keyboard proficiency requirement is fulfilled. A junior recital (20-30 minutes) and a senior recital (at least 50 minutes) must be presented; authorization to present a recital may be granted only following a hearing before the music faculty. All music majors are required to attend Recital Seminars each semester of residence.

**THEATRE.** A major in theatre leading to the BCA consists of 42 semester hours of theatre including two semesters of acting, two semesters of technical theatre, two semesters of theatre history, one semester of directing, and 15 hours of theatre electives. Theatre majors are required to take six semesters of applied theatre, which involves participation in various aspects of production.

### PERFORMING ARTS MINORS

**DANCE.** A minor in dance requires 24 semester hours: 19 hours of studio courses in modern dance, ballet and jazz dance; two hours of applied dance (involvement in dance productions); and three hours of ideokinesiology.

**MUSIC.** A minor in music requires 21 semester hours: eight hours of structure and style, three hours of music appreciation, four hours of ensemble, and six hours of applied music (private lessons).

**THEATRE.** A minor in theatre requires 21 semester hours: six hours in performance electives, six hours in technical theatre electives, six hours in theatre history, and three hours of applied theatre (involvement in theatre productions).

### HONORS PROGRAM IN PERFORMING ARTS

The honors program in Performing Arts was developed primarily for majors and is based on individual honors projects.

*Admission.* Students must have completed a number of course prerequisites and at least 60 semester hours of course work and have an overall GPA of 3.00 and a 3.50 in Performing Arts course work. Additionally, honors students must be recommended by the Department Honors Committee to participate in the program.

*Courses.* The courses offered are "Individual Project, Honors" at both the junior and senior levels.

*Certification Requirements.* A student must complete 15 hours of honors individual projects, with at least six hours of work at the senior individual level and achieve an overall GPA of 3.50 in all honors course work completed in the Department.

## CURRICULUM OUTLINE
## FOR THE DANCE MAJOR
## LEADING TO THE BCA DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| DANC 1212 | 2 | DANC 1213 | 2 |
| DANC 1214 | 2 | DANC 1215 | 3 |
| DANC 1216 | 1 | DANC 1217 | 1 |
| DANC 2226 | 1 | DANC 2227 | 1 |
| DANC 1218 | 1 | English 1102 | 3 |
| English 1101 | 3 | Foreign Language Proficiency | 4 |
| Foreign Language Proficiency | 4 | Elective | 3 |
| | 14 | | 17 |

### Sophomore Year

| | | | |
|---|---|---|---|
| DANC 1216 | 0 | DANC 1217 | 0 |
| DANC 2119 | 3 | DANC 2223 | 2 |
| DANC 2222 | 2 | DANC 2225 | 3 |
| DANC 2224 | 3 | DANC 2228 | 2 |
| GOAL II | 3 | GOAL I | 3 |
| GOAL IV | 4 | GOAL IV | 4 |
| | 15 | | 14 |

### Junior Year

| | | | |
|---|---|---|---|
| DANC 1216 | 0 | DANC 1217 | 0 |
| DANC 3234 | 3 | DANC 3235 | 3 |
| DANC 2222 | 2 | DANC 2223 | 2 |
| DANC 2110 | 3 | DANC 2111 | 3 |
| GOAL IV | 4 | GOAL III | 3 |
| GOAL I: (W) | 3 | GOAL I: (W) | 3 |
| | | Elective | 1 |
| | 15 | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| DANC 1216 | 0 | DANC 1217 | 0 |
| DANC 3230 | 3 | GOAL V: (A) | 3 |
| GOAL V: (L) | 3 | GOAL VI | 3 |
| GOAL VI | 3 | Electives | 9 |
| Electives | 6 | | |
| | 15 | | 15 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## CURRICULUM OUTLINE
## FOR THE MUSIC MAJOR
## LEADING TO THE BCA DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| MUSC 1230 | 4 | MUSC 1231 | 4 |
| MUSC Applied | 2 | MUSC 1132 | 3 |
| MUSC Ensemble | 1 | MUSC Applied | 2 |
| *MUSC 1248 | 1 | MUSC Ensemble | 1 |
| Recital Seminar | 0 | *MUSC 1248 | 1 |
| English 1101 | 3 | Recital Seminar | 0 |
| Foreign Language Proficiency | 4 | English 1102 | 3 |
| | | Foreign Language Proficiency | 4 |
| | 15 | | 18 |

### Sophomore Year

| | | | |
|---|---|---|---|
| MUSC 2230 | 4 | MUSC 2231 | 4 |
| MUSC Applied | 2 | MUSC Applied | 2 |
| MUSC Ensemble | 1 | MUSC Ensemble | 1 |
| *MUSC 1248 | 1 | *MUSC 1248 | 1 |
| Recital Seminar | 0 | Recital Seminar | 0 |
| GOAL II | 3 | GOAL II | 3 |
| GOAL IV | 4 | GOAL IV | 4 |
| | 15 | | 15 |

### Junior Year

| | | | |
|---|---|---|---|
| MUSC Applied | 2 | MUSC Applied | 2 |
| MUSC Ensemble | 1 | MUSC Ensemble | 1 |
| Recital Seminar | 0 | Recital Seminar | 0 |
| GOAL IV | 4 | **Junior Recital | 0 |
| GOAL I: (W) | 3 | GOAL III | 3 |
| Electives | 5 | GOAL I: (W) | 3 |
| | | Electives | 6 |
| | 15 | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| MUSC Applied | 2 | MUSC Applied | 2 |
| MUSC Ensemble | 1 | MUSC Ensemble | 1 |
| Recital Seminar | 0 | Recital Seminar | 0 |
| GOAL V: (L) | 3 | **Senior Recital | 0 |
| GOAL IV | 3 | GOAL V: (A) | 3 |
| Electives | 6 | GOAL VI | 3 |
| | | Electives | 3 |
| | 15 | | 12 |

*All music majors must enroll in piano until the keyboard proficiency is fulfilled.
**See Performing Arts Handbook for recital policies.

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## CURRICULUM OUTLINE
## FOR THE THEATRE MAJOR
## LEADING TO THE BCA DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| THEA 1201 | 3 | THEA 1202 | 3 |
| THEA 1203 | 3 | THEA 1205 | 3 |
| THEA 1207 | 1 | THEA 1207 | 1 |
| English 1101 | 3 | English 1102 | 3 |
| Foreign Language Proficiency | 4 | Foreign Language Proficiency | 4 |
| | 14 | | 14 |

### Sophomore Year

| | | | |
|---|---|---|---|
| THEA 2101 or 2216 | 3 | THEA 2102 or THEA Elective | 3 |
| THEA 1207 | 1 | THEA 1207 | 1 |
| THEA Elective | 3 | THEA Elective | 3 |
| GOAL II | 3 | GOAL II | 3 |
| GOAL IV | 4 | GOAL IV | 4 |
| | 14 | | 14 |

### Junior Year

| | | | |
|---|---|---|---|
| THEA 2101 or 2216 | 3 | THEA 2102 or THEA Elective | 3 |
| THEA 1207 | 1 | THEA 1207 | 1 |
| GOAL IV | 4 | GOAL III | 3 |
| GOAL I: (W) | 3 | GOAL I: (W) | 3 |
| Electives | 6 | Electives | 6 |
| | 17 | | 16 |

### Senior Year

| | | | |
|---|---|---|---|
| THEA Elective | 3 | THEA Elective | 3 |
| GOAL V: (L) | 3 | GOAL V: (A) | 3 |
| GOAL VI | 3 | GOAL VI | 3 |
| Electives | 7 | Electives | 6 |
| | 16 | | 15 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## DANCE (DANC)

(112) **DANC 1212. Ballet I. (2)** Fundamentals of ballet technique, barre and floor work. May be repeated for credit. *(Fall, Spring)*

(113) **DANC 1213. Ballet II. (2)** Prerequisite: DANC 1212 or consent of instructor. Continuation of DANC 1212. May be repeated for credit. *(Fall, Spring)*

(114) **DANC 1214. Modern Dance I. (2)** Combination of improvisation, effort-shape, elementary modern styles. May be repeated for credit. Four contact hours. *(Fall, Spring, Summer) (Evenings)*

(115) **DANC 1215. Modern Dance II. (3)** Prerequisite: DANC 1214, or consent of instructor. Continuation of DANC 1214. May be repeated for credit. Six contact hours. *(Fall, Spring)*

(116) **DANC 1216. Applied Dance and Repertory Lab. (1)** Prerequisite: consent of instructor. Repertory and performance team-taught by members of the dance faculty. Required of majors. Six contact hours. *(Fall)*

(117) **DANC 1217. Applied Dance and Repertory Lab. (1)** Prerequisite: consent of the instructor. Continuation of DANC 1216. Six contact hours. *(Spring)*

**DANC 1218. Dance Improvisation. (1)** Exploration of the basic elements of dance through spontaneous group interaction. Two contact hours. *(Fall)*

(210) **DANC 2110. History of Dance I. (3)** Prerequisite: DANC 1215. Historical and cultural developments in dance using Louis Horst's Modern Dance Forms. *(Fall) (Alternate years)*

(211) **DANC 2111. History of Dance II. (3)** Prerequisite: DANC 2110. Historical and cultural developments in dance using Horst's Pre-Classic Dance Forms. *(Spring) (Alternate years)*

(219) **DANC 2119. Ideokinesiology. (3)** Prerequisite: DANC 1215. Concentration on visual and tactile aids as well as imagery for teaching dance and body re-education. Two lecture hours, two lab hours. *(Spring)*

(220) **DANC 2120. Dance Education Methods I. (3)** Prerequisites: DANC 1215 or consent of instructor. Creative movement theories; techniques and skills for teaching the elementary school child. Three lecture hours, one lab hour. *(Fall) (Alternate years)*

(221) **DANC 2121. Dance Education Methods II. (3)** Prerequisite: DANC 1215 or consent of instructor. Experiences in techniques for teaching dance in secondary schools. Three lecture hours, one lab hour. *(Spring) (Alternate years)*

(212) **DANC 2222. Ballet III. (2)** Prerequisite: DANC 1213 or consent of instructor. Intermediate ballet; barre and centerwork. May be repeated for credit. Four contact hours. *(Fall)*

(213) **DANC 2223. Ballet IV. (2)** Prerequisite: DANC 2222 or consent of instructor. A continuation of DANC 2222. May be repeated for credit. Four contact hours. *(Spring)*

(214) **DANC 2224. Modern Dance III. (3)** Intermediate modern dance technique. May be repeated for credit. Six contact hours. *(Fall) (Alternate years)*

(215) **DANC 2225. Modern Dance IV. (3)** Prerequisite: DANC 1215. A continuation of DANC 2224. May be repeated for credit. Six contact hours. *(Spring) (Alternate years)*

(216) **DANC 2226. Jazz Dance I. (1)** Fundamentals of jazz dance technique. May be repeated for credit. Two contact hours. *(Fall, Spring)*

(217) **DANC 2227. Jazz Dance II. (1)** Expansion of DANC 2226. May be repeated for credit. Two contact hours. *(Fall, Spring)*

(218) **DANC 2228. Creative Dance Experience. (2)** Prerequisite: DANC 1215. Exploration of basic dance elements: space, time, energy, and design. Majors only. Four contact hours. *(Spring)*

(201) **DANC 2601. Sophomore Individual Project. (2)** Project designed by the student with the assistance of the adviser and review committee. Majors only. Three contact hours. *(Fall, Spring)*

(205) **DANC 3001. Topics in Dance. (1)** Special topic in dance. May be repeated for credit with change in topic. Two contact hours. *(On demand)*

(310) **DANC 3230. Choreography. (3)** Prerequisites: DANC 2110, 2111, 2228. Methods and sources of dance composition. Six contact hours. *(Fall) (Alternate years)*

(314) **DANC 3234. Modern Dance V. (3)** Prerequisite: DANC 2225. Dance technique at an intermediate advanced level. May be repeated for credit. Six contact hours. *(Fall) (Alternate years)*

(315) **DANC 3235. Modern Dance VI. (3)** Prerequisite: DANC 2225. Continuation of DANC 3234. May be repeated for credit. Six contact hours. *(Spring) (Alternate years)*

(301) **DANC 3601. Junior Individual Project I. (3)** Prerequisite: DANC 2601. Majors only. Three contact hours. *(Fall)*

(302) **DANC 3602. Junior Individual Project II. (3)** Prerequisite: DANC 3601. Majors only. Three contact hours. *(Spring)*

(401) **DANC 3691. Senior Individual Project I. (6)** Prerequisite: DANC 3602. Majors only. Three contact hours. *(Fall)*

(402) **DANC 3692. Senior Individual Project II. (6)** Prerequisite: DANC 3691. Majors only. Three contact hours. *(Spring)*

## MUSIC (MUSC)

(071A) **MUSC 0971. Orchestra. (1)** Prerequisite: consent of instructor. A performing ensemble. May be repeated for credit. Three contact hours. *(On demand)*

(071B) **MUSC 0972. Jazz Ensemble. (1)** Prerequisite: consent of instructor. A performing ensemble. May be repeated for credit. Three contact hours. *(Fall, Spring)*

(071C) **MUSC 0973. Wind Ensemble. (1)** Prerequisite: consent of instructor. A performing ensemble. May be repeated for credit. Three contact hours. *(Fall, Spring)*

(071D) **MUSC 0974. Guitar Ensemble. (1)** Prerequisite: consent of instructor. A performing ensemble. May be repeated for credit. Three contact hours. *(Fall, Spring)*

(081A) **MUSC 0981. Oratorio Choir. (1)** A large performing ensemble. No audition required. May be repeated for credit. Three contact hours. *(Fall, Spring)*

(081B) **MUSC 0982. University Chorale. (1)** Prerequisite: audition. A performing ensemble. May be repeated for credit. Three contact hours. *(Fall, Spring)*

(081D) **MUSC 0983. Madrigal Ensemble. (1)** Prerequisite: audition. A performing ensemble. May be repeated for credit. Three contact hours. *(On demand)*

(129) **MUSC 1100. Rudiments of Music. (3)** Introductory skill-building course in music reading. *(On demand)*

(132) **MUSC 1132. Music Appreciation. (3)** Aural approach to musical comprehension. *(Fall, Spring, Summer)*

**MUSC 1133. The History of Rock Music. (3)** A chronological approach to the evolution of rock music, its varied styles and artists. *(Fall)*

**MUSC 1134. The Evolution of Jazz. (3)** A chronological approach to the history of jazz, its main styles and artists. *(Spring)*

(130) **MUSC 1230. Musical Structure and Style I. (4)** Prerequisite: consent of instructor. Relationships of basic musical concepts within a historical context. Five contact hours. *(Fall)*

(131) **MUSC 1231. Musical Structure and Style II. (4)** Prerequisite: MUSC 1230. A continuation of MUSC 1230. Five contact hours. *(Spring)*

(133) **MUSC 1233. Class Piano I. (2)** Prerequisite: consent of instructor. Class instruction in piano. Three contact hours. *(Fall, Spring)*

(134) **MUSC 1234. Class Piano II. (2)** Prerequisite: MUSC 1233 or consent of instructor. A continuation of MUSC 1233. Three contact hours. *(Fall, Spring)*

(137) **MUSC 1237. Class Voice. (2)** Prerequisite: consent of instructor. Class instruction in voice. Three contact hours. *(Fall)*

(138) **MUSC 1238. Guitar Class I. (2)** Prerequisite: consent of instructor. Class instruction in guitar using contemporary popular music and music from a text. Three contact hours. *(Fall, Spring)*

(139) **MUSC 1239. Guitar Class II. (2)** Prerequisite: consent of instructor. Continuation of MUSC 1238. Three contact hours. *(Fall, Spring)*

**MUSC 1241-1259. Applied Music courses consist of private instruction, one-half hour instruction per week per credit hour. Minimum of one hour practice per day for one credit, two hours for two credits. May be repeated for credit.**

**MUSC 1241. Applied Music: Trumpet. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1242. Applied Music: French Horn. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1243. Applied Music: Trombone. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1244. Applied Music: Tuba. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1245. Applied Music: Guitar. (1-2)** Prerequisite: consent of instrutor. *(Fall, Spring)*

**MUSC 1246. Applied Music: Harp. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1247. Applied Music: Organ. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1248. Applied Music: Piano. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1249. Applied Music: Violin. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1250. Applied Music: Viola. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1251. Applied Music: Cello. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1252. Applied Music: Bass. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1253. Applied Music: Voice. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1254. Applied Music: Flute. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1255. Applied Music: Clarinet. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1256. Applied Music: Saxophone. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1257. Applied Music: Oboe. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1258. Applied Music: Bassoon. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

**MUSC 1259. Applied Music: Percussion. (1-2)** Prerequisite: consent of instructor. *(Fall, Spring)*

(237) **MUSC 2137. Phonetics and Articulation for Singers I. (2)** Prerequisite: consent of instructor. Pronunciation and articulation in vocal music in English, Italian, German and French. Three contact hours. *(Fall)*

(238) **MUSC 2138. Phonetics and Articulation for Singers II. (2)** Prerequisites: MUSC 2137 and consent of instructor. Three contact hours. *(Spring)*

(232) **MUSC 2191. Music for Classroom Teachers. (3)** Acquisition of musical skills and relating them to methods and materials for teaching music in the classroom. *(Fall, Spring)*

(233) **MUSC 2192. Elementary Music Methods. (3)** Prerequisite: MUSC 2191 or consent of instructor. Methods and materials for teaching music to elementary school children. *(On demand)*

(234) **MUSC 2193. Secondary Music Methods. (3)** Methods and materials for teaching music to junior and senior high school students. *(On demand)*

(230) **MUSC 2230. Musical Structure and Style III. (4)** Prerequisite: MUSC 1231. Five contact hours. *(Fall)*

(231) **MUSC 2231. Musical Structure and Style IV. (4)** Prerequisite: MUSC 2230. Five contact hours. *(Spring)*

**MUSC 2232. Jazz Improvisation I. (2)** Prerequisite: permission of instructor. An introduction to major, minor diminished, augmented, 7th, 9th, 11th, and 13th chords and to their usage within the confines of a piece of music with particular attention to the melodic line. *(Fall)*

**MUSC 2233. Jazz Improvisation II. (2)** Prerequisite: permission of instructor. An expansion of MUSC 2232, with particular attention to refinement and maturity of the melodic line. *(Spring)*

(201) **MUSC 2601. Sophomore Individual Project. (2)** Project designed by the student with the assistance of the adviser and review committees. Majors only. Three contact hours. *(Fall, Spring)*

(305) **MUSC 3001. Topics in Music. (1-6)** Prerequisite: consent of instructor. Special topic in music. May be repeated for credit with change of topic. *(On demand)*

(136) **MUSC 3135. Choral Conducting. (3)** Prerequisite: MUSC 2231. Developing conducting skills for interpreting choral music. *(On demand)*

(135) **MUSC 3136. Instrumental Conducting. (3)** Prerequisite: MUSC 3135. Developing conducting skills for interpreting instrumental music. *(On demand)*

**MUSC 3137. Vocal Pedagogy. (3)** Prerequisite: two semesters of MUSC 1253 or permission of instructor. A methodology course dealing with technique, vocal problem/solution and physiology, and voice production. *(Spring)*

(230) **MUSC 3138. Counterpoint. (3)** Prerequisite: MUSC 2231. Counterpoint beginning with 16th century techniques. *(On demand)*

(235) **MUSC 3139. Orchestration. (3)** Prerequisite: MUSC 2231. Scoring and arranging for instruments and/or voice. *(On demand)*

(071E) **MUSC 3281. Chamber Music Ensembles. (1 or 2)** Prerequisite: consent of instructor. Performance by small groups of specific works. Two sections: one with and one without keyboard. *(Fall, Spring)*

(081E) **MUSC 3283. Opera Workshop. (2)** Prerequisite: audition. Performance of scenes, acts, and entire operas. May be repeated for credit. Three contact hours. *(Fall, Spring)*

(301) **MUSC 3601. Junior Individual Project I. (3)** Prerequisite: MUSC 2602. Majors only. Three contact hours. *(Fall)*

(302) **MUSC 3602. Junior Individual Project II. (3)** Prerequisite: MUSC 3601. Majors only. Three contact hours. *(Spring)*

(401) **MUSC 3691. Senior Individual Project I. (6)** Prerequisite: MUSC 3602. Majors only. Three contact hours. *(Fall)*

(402) **MUSC 3692. Senior Individual Project II. (6)** Prerequisite: MUSC 3691. Majors only. Three contact hours. *(Spring)*

(243) **MUSC 3831. Composition. (2)** Prerequisite: MUSC 2231 or consent of instructor. Private instruction. May be repeated for credit. One contact hour. *(Fall, Spring)*

## THEATRE (THEA)

(150) **THEA 1101. Introduction to Theatre. (3)** Survey and analysis of the elements that make up the theatrical event. *(Fall, Spring)*

(162) **THEA 1102. Creative Drama. (3)** Drama and theatre as teaching tools to achieve educational ends in any subject in the classroom. *(On demand)*

**THEA 1103. Acting for Non-Theatre Majors. (3)** Introduction to the nature of acting for the stage. Study and practice of acting principles, including voice development, movement, and the use of the imagination. (This course may not be used as a prerequisite for THEA 1202, Acting II.) *(Fall, Spring)*

(152) **THEA 1201. Acting I. (3)** Introduction to acting derived principally from a system of vocal and physical training. Six contact hours. *(Fall)*

(153) **THEA 1202. Acting II. (3)** Prerequisite: THEA 1201. Continuation of THEA 1201. Six contact hours. *(Spring)*

(154) **THEA 1203. Stagecraft I. (3)** Construction and painting skills with some attention to basic elements of theatrical design. Crew hours required in addition to three contact hours. *(Fall, Spring)*

(155) **THEA 1204. Stagecraft II. (3)** Expansion of THEA 1203. *(On demand)*

(156) **THEA 1205. Introduction to Costuming Techniques. (3)** Introduction to costume shop equipment, sewing techniques, basic patterning and construction of costume accessories. *(Fall, Spring)*

(157) **THEA 1206. Theatrical Make-Up. (3)** Modeling of the face as well as special clown, character and unusual make-up. *(Spring)*

(160) **THEA 1207. Applied Theatre. (1-2)** Practical production experience with the UNCC Theatre Ensemble. May be repeated for credit. *(Fall, Spring)*

(250) **THEA 2101. Theatre History I. (3)** Theatre history from pre-classical periods to the seventeenth century. *(Fall) (Alternate years)*

(251) **THEA 2102. Theatre History II. (3)** Seventeenth century to the present. *(Spring) (Alternate years)*

(258) **THEA 2103. Costume Design. (3)** Costume design theory and history. *(Fall)*

(252) **THEA 2201. Acting III. (3)** Processes of character development based largely on the theories of Stanislavsky. Six contact hours. *(Fall)*

(253) **THEA 2202. Acting IV. (3)** Prerequisite: THEA 2201. A continuation of THEA 2201. Six contact hours. *(Spring)*

(254) **THEA 2203. Scene Study. (3)** Prerequisite: THEA 1202. Actor's Workshop dealing with the analysis, rehearsal and performance of scenes and one-act plays. May be repeated for credit. Six contact hours. *(Spring)*

(255) **THEA 2204. Musical Theatre Performance Techniques. (3)** Prerequisite: THEA 1202. Actor's Workshop dealing with special skills required for the performance of musical theatre. Six contact hours. *(Fall)*

(256) **THEA 2205. Scene Design I. (3)** Survey of the elements of scene design. *(Fall)*

(257) **THEA 2206. Scene Design II. (3)** Model building. *(Spring)*

(259) **THEA 2207. Puppetry. (3)** Types of puppets and the history of puppetry with emphasis on basic puppetry construction and production problems. *(Fall, Spring) (Evenings)*

(262) **THEA 2212. Stage Lighting. (3)** Mechanics of electricity, light, lenses and control systems. *(Spring)*

(263) **THEA 2213. Stage Properties. (3)** Survey of hand, set, and dress properties with emphasis on design and production techniques. *(Spring)*

(264) **THEA 2214. Scene Painting. (3)** Scene painting techniques, using primarily water media. *(Fall)*

(265) **THEA 2215. Advanced Costume Problems. (3)** Draping and drafting of costume fitting and layout techniques, masks and millinery finishing methods. *(Spring)*

(266) **THEA 2216. Play Directing I. (3)** Prerequisite: six hours of acting and six hours of design; three hours of design may be taken concurrently. Principles and techniques of play directing including analyzing texts, staging, and communication with actors. *(Fall) (Alternate years)*

(267) **THEA 2217. Play Directing II. (3)** Prerequisite: THEA 2216. Continuation of THEA 2216, with emphasis on advanced analysis, coaching, communication with designers, and complex staging problems. *(Spring) (Alternate years)*

(268) **THEA 2218. Playwriting I. (3)** Writing scenes and performing dramatic readings of fellow writers' scenes. A number of plays will be analyzed. *(On demand)*

(269) **THEA 2219. Playwriting II. (3)** Prerequisite: THEA 2218. Structure and techniques of writing longer works and of rewriting. Continuation of play analysis. *(On demand)*

(201) **THEA 2601. Sophomore Individual Project. (2)** Project designed by the student with the assistance of the adviser and review committees. Majors only. Three contact hours. *(Fall, Spring)*

(305) **THEA 3001. Topics in Theatre. (1-6)** Special topic in theatre. May be repeated for credit with change of topic. *(On demand)*

(301) **THEA 3601. Junior Individual Project I. (3)** Prerequisite: THEA 2601. Majors only. Three contact hours. *(Fall)*

(302) **THEA 3602. Junior Individual Project II. (3)** Prerequisite: THEA 3601. Majors only. Three contact hours. *(Spring)*

(401) **THEA 3691. Senior Individual Project I. (6)** Prerequisite: THEA 3602. Majors only. Three contact hours. *(Fall)*

(402) **THEA 3692. Senior Individual Project II. (6)** Prerequisite: THEA 3691. Majors only. Three contact hours. *(Spring)*

# Department of Philosophy

*Chairperson:* Assistant Professor Toenjes
*Professors:* Fishman, Lincourt, Shumaker
*Associate Professors:* Gay, Presler
*Assistant Professor:* Croy
*Assistant Professor Emeritus:* Corkey

Philosophy is reasoned inquiry into basic principles for understanding the nature of persons, reality, thought, knowledge, values and beauty. It seeks to establish standards of evidence, to provide rational methods of resolving conflicts, and to create techniques for evaluating fundamental ideas and arguments in all areas of human existence and knowledge. Equally concerned with human endeavor in both the arts and the sciences, philosophy continues to reside at the core of a liberal education.

Students major or minor in philosophy out of a love for the subject and a need to pursue fundamental ideas and principles. The study of philosophy does not contribute primarily to obtaining one's first job after graduation; rather, its value lies in the range of things one can understand and enjoy throughout life. Immediate career opportunities are the same as for other solid programs in liberal arts and sciences.

Many students take just one or two philosophy courses, while majoring in other programs. They find their study of basic ideas and principles enriches their general education and adds a dimension of understanding to courses in their major program. Students often find that philosophy courses give them a deeper understanding of many contemporary social issues, such as biomedical, business, professional and technological ethics. Courses in critical thinking and logic are a benefit to students in all their course work and can be especially useful to students who plan to enter graduate school, law school, and various professional fields.

## BACHELOR OF ARTS

A major in philosophy leading to a B.A. degree consists of a minimum of 28 semester hours in philosophy and includes PHIL 2101, 2105, 3211, 3213 and Senior Thesis, 4991 and 4992. Additional work is to be chosen from other philosophy offerings and must be at the 3000 level or above.

Required related work consists of 15 hours of courses that complement the focus of the student's work in philosophy. Such work is to be chosen in consultation with the department representative or adviser. The completion of a minor or second major fulfills the related work requirement. Students contemplating graduate study in philosophy are encouraged to develop reading proficiency in German and French.

## PHILOSOPHY MINOR

A minor in philosophy consists of 15 hours including the following courses and types of courses: PHIL 2101; one course in Logic (PHIL 1105, 2105 or 3235); one course in the traditional historical periods (Ancient, Medieval, Modern, or Contemporary); one course in a traditional problem area (Aesthetics, Ethics, Metaphysics, Theory of Knowledge, or another course of this type with departmental approval); and one additional three-hour course at the 3000 level or above.

## PHILOSOPHY (PHIL)

(105) **PHIL 1105. Critical Thinking. (3)** Fundamental skills of clear thinking and critical assessment of typical messages by and between persons in everyday situations. Application of logical methods to advertisements, editorials, political speeches and textbooks to distinguish effective from ineffective forms of reasoning. *(Fall, Spring, Summer)*

(201) **PHIL 2101. Introduction to Philosophy. (3)** Basic concepts and problems of philosophy such as freedom and determinism, mind-body interaction, the status of moral judgments and the problem of perception. Readings from the works of representative philosophers both classical and contemporary. *(Fall, Spring, Summer) (Evenings)*

(205) **PHIL 2105. Deductive Logic. (3)** Principles of deductive logic, both classical and symbolic, with emphasis on the use of formal logic in analysis or ordinary language discourse. *(Fall, Spring, Summer) (Evenings)*

**Note on prerequisites for upper-level courses.** Introduction to Philosophy (PHIL 2101), while not a prerequisite for courses at the 3000 level and above, is the basic introduction to the subject. Typically students who have taken PHIL 2101 benefit more from upper-level philosophy courses than students who have not.

(350) **PHIL 3050. Topics. (3)** Prerequisite: consent of the Department. Topics chosen from specific areas in philosophy such as freedom and determinism, imagination, detailed study of significant philosophical movements or works. May be repeated for additional credit with the approval of the Department. *(On demand)*

(360) **PHIL 3060. Major Figure in Philosophy. (3)** Prerequisite: consent of the Department. An investigation into the thoughts and writings of a major figure in philosophy with special emphasis on primary sources. Included may be Plato, Aristotle, Descartes, Kant, Heidegger, and others as necessitated by departmental needs and interests. May be repeated for additional credit. *(On demand)*

(301) **PHIL 3201. Meaning of Death. (3)** Death in the western tradition. Philosophical, religious, existential, psychological and literary readings clarifying conceptual problems in our ways of speaking about death. Understanding death as a horizon for understanding life. (Same as RELS 3201.) *(On demand)*

(305) **PHIL 3205. Philosophy In and Of Literature. (3)** Relationship between philosophy and literature with special emphasis on the nature of literature as it presents concepts and evaluations. Readings will be in the theory of literature as well as in contemporary novels, plays and short stories for both their philosophical and their aesthetic properties. *(On demand)*

(311) **PHIL 3211. Ancient Philosophy. (3)** Western intellectual and philosophic thought from the early Greeks to the post-Aristotelian period. Readings from the pre-Socratics, Plato, Aristotle, Epicureans, Stoics, Skeptics and Neoplatonists. *(Fall)*

(312) **PHIL 3212. Medieval Philosophy. (3)** Western philosophical tradition from Augustine to William of Ockham. Readings include such other authors as Anselm of Canterbury, Bonaventure, Thomas Aquinas and Duns Scotus. *(On demand)*

(313) **PHIL 3213. Modern Philosophy from Descartes to Kant. (3)** Modern philosophic and scientific thought. Readings selected from respective works in the 17th to the 19th centuries. *(Spring)*

(314) **PHIL 3214. Contemporary Philosophy. (3)** Main problems of contemporary philosophy; pragmatism, logical positivism, linguistic analysis, existentialism. *(On demand)*

(317) **PHIL 3217. American Philosophy. (3)** European philosophic movements with counterparts in American thought, leading to distinctly American pragmatism, realism and humanism. Readings from 19th- and 20th-century philosophers. *(On demand)*

(321) **PHIL 3221. Ethics. (3)** A study of the nature and foundations of moral judgment, the principles and criteria for sound moral decisions, and the application of these to contemporary moral issues. Discussion includes such specific problems as: abortion, capital punishment, privacy, war, and sexual morality. *(On demand)*

(323) **PHIL 3223. Existentialism. (3)** Existentialist tradition in philosophy and literature including such issues as: authenticity, absurdity and the meaning of life, freedom and morality, anguish, death, and atheism. *(On demand)*

(325) **PHIL 3225. Aesthetics. (3)** Major theories of art, including readings from Aristotle, Kant, Nietzsche, Collingwood, Dewey, Langer and Beardsley. Emphasis on expression, criticism, the work of art, the creative process. *(Fall, Spring)*

(326) **PHIL 3226. Social and Political Philosophy. (3)** Philosophical concepts involved in understanding and evaluating the basic structure of societies (e.g., economic, educational, legal, motivational and political) including equality, fraternity, freedom and rights. Relevance to contemporary social and political issues stressed. Readings from classical and contemporary sources. *(On demand)*

(328) **PHIL 3228. Biomedical Ethics. (3)** Major ethical dilemmas within the life sciences examined to assist students to identify, analyze, and decide ethical issues in such a way that they can defend their positions to themselves and others. Issues include abortion, death and dying, patient rights, and justice in the allocation of medical resources. *(Yearly)*

(331) **PHIL 3231. Business Ethics. (3)** Ethical problems confronting business as a social institution and individuals in business. Application of ethical theory to business institutions and practices, internal exchanges of business (e.g., hiring, promotions, working conditions, employer/employee rights and duties) and external exchanges (e.g., product safety, environment, depletion, marketing, advertising.) *(Spring)*

(335) **PHIL 3235. Advanced Logic. (3)** Advanced systems of logic, with emphasis upon symbolic logic and formal systematic characteristics such as axiomatics and proof techniques. *(On demand)*

(342) **PHIL 3242. Philosophy of Religion. (3)** Philosophical implications of religious experience including the definitions, development and diverse forms of the problems of belief and reason in modern thought. (Same as RELS 3242.) *(On demand)*

(445) **PHIL 3245. Philosophy of Mind. (3)** Conceptual issues in the mind/body problem and the problem of other minds. Analysis of concepts of intention, motivation, consciousness, imagination and emotion. *(On demand)*

(347) **PHIL 3247. Philosophy of Science. (3)** Epistemological, methodological, metaphysical, interdisciplinary and meta-disciplinary issues arising out of science with "science" construed very broadly to imply a strong connection with all systematic inquiry, either past or present, into natural or social questions. *(On demand)*

**PHIL 3265. Theory of Knowledge. (3)** A study of various theories on the nature, foundations and limits of knowledge. Analysis of the notions of knowledge and belief, evidence and the sources of knowledge. Discussion of the principles and criteria for distinguishing knowledge from opinion or belief. Readings from both classical and contemporary sources. *(On demand)*

(375) **PHIL 3275. Metaphysics. (3)** Inquiry into the most fundamental and comprehensive structures and categories of reality, especially in relation to persons as knowers and agents. Discussion of such topics as: being, existence and truth; substance, essence and accident; universals and individuals; mind, soul, matter and god. *(On demand)*

(350) **PHIL 3851. Practicum in Philosophy. (1-3)** Prerequisite: consent of the Department. Directed individual study involving the student and instructor in rethinking and reworking some major problems in the teaching of undergraduate philosophy including interaction with a particular class, usually PHIL 2101 or 2105, in the preparation, presentation and evaluation of the course. (Not for teacher certification.) *(On demand)*

(350) **PHIL 3859. Independent Study. (1-3)** Prerequisite: consent of the Department. Directed individual study of a philosophical issue of special interest to the student. May be repeated for additional credit as the topics vary and with departmental approval. No more than six hours may apply toward the major in philosophy. *(On demand)*

(491) **PHIL 3991. Senior Thesis. (2)** Prerequisite: consent of the Department. Individual or group inquiry into selected philosophic problems. Exposition and discussion of the results. *(On demand)*

(492) **PHIL 3992. Senior Thesis. (2)** Prerequisite: consent of the Department. A continuation of PHIL 4991 focused on preparation and presentation of a senior thesis. *(On demand)*

**Courses for Advanced Undergraduate and Graduate Students**

**PHIL 4050. Topics in Philosophy. (3) (3G)** Prerequisite: consent of the Department. Extra work is required of students receiving graduate credit. Selected problems and issues in philosophy. May be repeated for additional credit as topics vary. *(On demand)*

# Department of Physics

*Chairperson:* Associate Professor Oberhofer
*Professors:* Pollak, Vermillion, Werntz
*Associate Professors:* Corwin, Mayes, Melton, Simpson
*Assistant Professors:* Aitken
*Lecturer:* Morris

Undergraduate study in physics is designed for students who seek simply to better understand the physical universe, as well as for students who will seek employment in a technical field following graduation, continue professional study or teach science in the public schools. The Department offers programs leading to the Bachelor of Arts and the Bachelor of Science degrees. Students who graduate with a bachelor's degree in physics may pursue graduate study in physics, engineering, or computer science or study in optometry or the medical field.

Physics students have special opportunities at UNCC. The Department of Physics is large enough to afford a variety of experiences for the students, but not so large that the student loses personal access to the faculty. Each student has the opportunity to work closely with individual faculty members of his/her choice, both in formal laboratory courses and on individual research projects.

Upper-level undergraduates have the opportunity to assist faculty members in teaching introductory physics laboratories. This gives students practical training as well as an employment opportunity usually available only to graduate students.

### BACHELOR OF ARTS

A major in physics leading to the B.A. degree consists of a minimum of 120 semester hours which fulfill the general degree requirements of The University. A minimum of 26 semester hours in physics with an average grade of *C* in the major area is required. The minimum of 26 hours must include Physics 2221, 2221L, 2231, 2231L, 2241, 2601, 3601, 3602, 4251 and at least nine additional hours at the 3000/4000 level to be approved by the Department.

### BACHELOR OF SCIENCE

A major in physics leading to the B.S. degree consists of a minimum of 120 semester hours which fulfill the general degree requirements of The University. A minimum of 36 semester hours in physics with an average grade of *C* in the major area is required. The minimum 36 hours must include Physics 2221, 2221L, 2231, 2231L, 2241, 2601, 3280, 3601, 3602, 4221, 4231, 4241, 4251; four hours selected from PHYS 3281, 3282, and 3283; and at least five additional hours at the 3000/4000 level to be approved by the Department.

For either program a first-year sequence of Physics 1101 and 1102, or Chemistry 1101 and 1102 is recommended. Students should note that Mathematics 1141, 1142, 2141, 2171 or their equivalents are prerequisites for various required physics courses. Freshmen should arrange their mathematics schedule so as to complete Math 1141 before beginning their sophomore year.

### PHYSICS MINOR

A minor in physics is available to all undergraduates except physics majors and requires PHYS 2221, 2221L, 2231, 2231L and 2241, and six additional hours in physics selected from the 3000 level or above.

### HONORS PROGRAM IN PHYSICS

To obtain a degree with honors in physics, the student must successfully complete PHYS 3602, 4800, and at least two courses selected from PHYS 4222, 4232, and 4242. The student must formally enter the Honors Program no later than the beginning of the second semester of the junior year. The Honors Committee of the Physics Department must formally approve admission. Details concerning this program are available from the Physics Department.

## A POSSIBLE CURRICULUM FOR THE PHYSICS MAJOR LEADING TO THE B.A. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| PHYS 1101 | 4 | Mathematics 1141 | 4 |
| English 1101 | 3 | English 1102 | 3 |
| Chemistry 1101 | 3 | PHYS 1102 | 4 |
| Chemistry 1101L | 1 | PHYS 1600 | 0 |
| Social Science | 3 | Humanity | 3 |
| Physical Education | 1 | Creative Arts (DANC, THEA, MUSC) | 1 |
| | 15 | | 15 |

### Sophomore Year

| | | | |
|---|---|---|---|
| PHYS 2221 | 3 | PHYS 2231 | 3 |
| PHYS 2221L | 1 | PHYS 2231L | 1 |
| PHYS 2601 | 1 | PHYS 3601 | 1 |
| Mathematics 1142 | 4 | Computer Science 1100 | 4 |
| Humanity | 3 | Mathematics 2141 | 3 |
| Chemistry 1102 | 3 | Physical Education | 1 |
| Chemistry 1106L | 1 | Elective | 3 |
| | 16 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| PHYS 2241 | 3 | Electives | 6 |
| Elective | 3 | PHYS Elective | 3 |
| PHYS Elective | 3 | Computer Science Elective | 3 |
| Mathematics 2171 | 3 | Communication Studies 1101 | 3 |
| Social Science | 3 | | |
| | 15 | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| Electives | 9 | Electives | 11 |
| PHYS 4251 | 3 | PHYS Elective | 3 |
| PHYS Elective | 3 | PHYS 3602 | 1 |
| | 15 | | 15 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## A POSSIBLE CURRICULUM FOR THE PHYSICS MAJOR LEADING TO THE B.S. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| Mathematics 1141 | 4 | Mathematics 1142 | 4 |
| English 1101 | 3 | English 1102 | 3 |
| Chemistry 1101 | 3 | PHYS 2221 | 3 |
| Chemistry 1101L | 1 | PHYS 2221L | 1 |
| Social Science | 3 | PHYS 1600 | 0 |
| Physical Education | 1 | Electives | 4 |
| | 15 | | 15 |

### Sophomore Year

| | | | |
|---|---|---|---|
| PHYS 2231 | 3 | PHYS 2241 | 3 |
| PHYS 2231L | 1 | PHYS 3601 | 1 |
| PHYS 2601 | 1 | Computer Science 1100 | 4 |
| Mathematics 2141 | 3 | Mathematics 2171 | 3 |
| Humanity | 3 | Humanity | 3 |
| Physical Education | 1 | Elective* | 3 |
| Elective* | 3 | | |
| | 15 | | 17 |

### Junior Year

| | | | |
|---|---|---|---|
| PHYS 4221 | 3 | Advanced PHYS Laboratory | 2 |
| PHYS 4251 | 3 | Elective* | 3 |
| Advanced PHYS Laboratory | 2 | PHYS 4241 | 3 |
| PHYS 3280 | 1 | PHYS Elective | 3 |
| Mathematics Elective | 3 | Computer Science Elective | 3 |
| Social Science | 3 | Communication Studies 1101 | 3 |
| | 15 | | 17 |

### Senior Year

| | | | |
|---|---|---|---|
| Advanced PHYS Laboratory | 2 | Elective* | 3 |
| PHYS 4242 | 3 | PHYS Elective | 3 |
| PHYS 4231 | 3 | PHYS Elective | 3 |
| Mathematics Elective | 3 | PHYS Elective | 2 |
| PHYS Elective | 3 | PHYS 3602 | 1 |
| Mathematics Elective | 3 | Elective | 3 |
| | 17 | | 15 |

*In order to secure a broader education, the Department suggests that these courses be taken in non-technical areas. Attention should be paid to fulfilling the GOALS of UNCC Education in selection of these courses.

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

### ASTRONOMY

103) **PHYS 1130. Introduction to Astronomy. (3)** Historical beginnings of astronomy. Motions of celestial bodies. Introduction to space science. The solar system. Optical and radio astronomy. Structure and evolution of stars. Galaxies, cosmology. Three lecture hours each week. If taken together with 1130L the combination can be counted toward the general degree requirements in natural science. *(Fall, Spring, Summer)*

103L) **PHYS 1130L. Introduction to Astronomy Laboratory. (1)** Prerequisite or corequisite: PHYS 1130. Experimental investigations relating to the acquisition of and interpretation of astronomical data. One three-hour laboratory each week. *(Fall, Spring) (Evenings)*

### PHYSICS (PHYS)

**Courses for Undergraduates**

101) **PHYS 1101. Introductory Physics I. (4)** Introduction to the fundamental principles of natural phenomena. Topics will be selected from traditional classical subjects (e.g., Newtonian mechanics, electromagnetism) and more recent developments in order to illustrate the logical structure of modern science. Three lecture and three laboratory hours each week. *(Fall, Spring, Summer) (Evenings)*

102) **PHYS 1102. Introductory Physics II. (4)** Prerequisite: PHYS 1101. A continuation of PHYS 1101. Three lecture and three laboratory hours each week. *(Fall, Spring, Summer) (Evenings)*

141) **PHYS 1141. Modern Physics for Non-Science Students. (3)** Treatment of physical theories developed since 1900. Topics include relativity, quantum physics, nuclear physics and elementary particles. Historical and philosophical aspects are stressed throughout the course. Three lecture hours a week. *(On demand)*

(105) **PHYS 1150. Basic Concepts in Physical Science with Applications to Teaching. (4)** Intended primarily for students in teacher education. Development of a context for scientific literacy including processes and attitudes involved in scientific work and the introduction and application of essential concepts such as property, interaction, measurement and control of variables, relativity of position and motion, energy, and scientific model. An activity-oriented course with emphasis on applications to teaching. Six laboratory/class hour per week. *(Fall, Spring)*

(190) **PHYS 1600. Seminar I. (0)** Students attend scheduled programs of scientific talks by faculty, students and/or visiting speakers. Films illustrating physics principles, recent developments or the broad historic and cultural relationship of science and society will be viewed. Regular attendance is required. Normally meets once every other week for up to two hours. *(Spring)*

(221) **PHYS 2221. Dynamics. (3)** Prerequisite: MATH 1141. Kinematics and dynamics of particles; momentum, work, energy; conservation laws, mechanics of rigid bodies. Three lecture hours a week. *(Fall, Spring, Summer) (Evenings)*

(251) **PHYS 2221L. Experimental Physics I. (1)** Corequisite: PHYS 2221. The first course of a laboratory sequence developing toward open-ended experiments designed to illustrate physical principles, to develop experimental technique and to encourage individual investigation by the student. Experiments in classical mechanics. One three-hour laboratory each week. *(Fall, Spring, Summer) (Evenings)*

(231) **PHYS 2231. Electricity and Magnetism. (3)** Prerequisites: PHYS 2221 and MATH 1142. Electric and magnetic fields in free space and in matter; electrostatic potential and capacitance; elementary circuit theory; electromagnetic induction and inductance; introduction to Maxwell's equations. Three lecture hours a week. *(Fall, Spring, Summer) (Evenings)*

(252) **PHYS 2231L. Experimental Physics II. (1)** Prerequisite: PHYS 2221L. Corequisite: PHYS 2231. Experiments in electricity and magnetism. One three-hour laboratory each week. *(Fall, Spring, Summer) (Evenings)*

(241) **PHYS 2241. Introduction to Waves and Modern Physics. (3)** Prerequisite: PHYS 2231. Introduction to waves in elastic media; sound; light; reflection; refraction; interference and diffraction; lenses and mirrors; and an introduction to quantum physics, atomic and nuclear structure, and the wave nature of matter. Three lecture hours a week. *(Fall, Spring, Summer)*

(291) **PHYS 2601. Seminar II. (1)** Prerequisite: PHYS 1600. The first semester of a two-semester introduction to techniques of scientific inquiry and communication. Use of assumptions, estimates and preliminary calculations to attack real scientific problems, with the use of reference material, and with investigation (usually an open-ended laboratory study of a simple physical system) is required. One scheduled class hour and at least two laboratory hours to be arranged each week. *(Fall)*

**Courses for Advanced Undergraduates**

(395) **PHYS 3000. Topics in Physics. (0-4)** Prerequisite: consent of the Department. Used to comply with requests for special topics which are introductory in nature. May be repeated with approval of the Department. *(On demand)*

(311) **PHYS 3181. A.C. Circuits and Electronics. (4)** Prerequisites: PHYS 2231 and 2231L. An introduction to A.C. circuit theory and electronics and an emphasis on the function and behavior of the individual components of an electronic circuit. Two hours of lecture and one three-hour laboratory each week. *(Fall) (Alternate years)*

(301) **PHYS 3201. Waves and Optics. (3)** Prerequisites: PHYS 2231, 2241, and MATH 1142. Topics include the mathematics of wave motion, light as an example of an electromagnetic wave, the superposition of periodic and non periodic waves, and selected topics from geometrical and physical optics; three lecture hours each week. *(Spring) (Alternate years)*

**PHYS 3280. Measurement Theory and Data Analysis. (1)** Prerequisite: PHYS 2231L. Topics include measurement theory, data analysis, the method of least squares, an introduction to the statistics of data analysis, and an introduction to the use of the computer for data analysis and graphing. One hour of lecture each week and a brief laboratory component. *(Fall)*

(351) **PHYS 3281. Advanced Laboratory in Waves and Optics. (2)** Prerequisite or corequisite: PHYS 3280. Selected laboratory work primarily in geometrical optics and microwaves. Emphasis on development of sound laboratory techniques, methods of data analysis, and the writing of formal laboratory reports. Three hours of laboratory each week. *(Spring) (Alternate years)*

(361) **PHYS 3282. Advanced Laboratory in Modern Physics. (2)** Prerequisite: PHYS 2241. Prerequisite or corequisite: PHYS 3280. Selected laboratory work in such areas as atomic spectra, radioactive decay and the interaction of radiation with matter. Emphasis on development of sound laboratory techniques, methods of data analysis, and the writing of formal laboratory reports. Three hours of laboratory each week. *(Spring) (Alternate years)*

(371) **PHYS 3283. Advanced Laboratory in Mechanics. (2)** Prerequisite or corequisite: PHYS 3280. Selected laboratory work in the area of classical mechanics. Topics are chosen for their relation to important principles and techniques or for their historical significance. Emphasis on development of sound laboratory techniques, methods of data analysis, and the writing of formal laboratory reports. Three hours of laboratory each week. *(Fall) (Alternate years)*

(397) **PHYS 3400. Internship in Community Education and Service. (3)** Prerequisites: junior standing, acceptance into the internship program and approval by the Physics Department. A project-oriented, service-learning internship with cooperating community organizations. Does not count as credit toward departmental requirements in physics. May be repeated once with permission of the Department. This course is offered on a *Pass/No Credit* basis. *(On demand)*

(391) **PHYS 3601. Seminar III. (1)** Prerequisite: PHYS 2601. Regular attendance in PHYS 1600 required and students may be invited to give a presentation. Concurrently, students finish their independent study projects begun in PHY 2601 and write a formal term paper or report. The student is expected to spend at least two hours in the laboratory each week. *(Spring)*

(491) **PHYS 3602. Seminar IV. (1)** Prerequisite: PHYS 3601, Senior Project. Students arrange to do a project in consultation with a faculty member willing to serve as resource person for the project. A formal term paper or report is required, and the student is expected to regularly attend and to give an oral presentation in PHYS 1600. The student is expected to spend at least two hours each week working on the project. *(Spring)*

**Courses for Advanced Undergraduates and Graduate Students**

(495) **PHYS 4000. Selected Topics in Physics. (0-4) (0-4G)** Prerequisite: consent of the Department. Advanced special topics. May be repeated with approval of the Department. *(On demand)*

(321) **PHYS 4221. Classical Mechanics I. (3) (3G)** Prerequisites: PHYS 2221; MATH 2141 and 2171. The first course of a two-semester sequence treating particle dynamics, the motion of systems of particles, rigid body motion, moving coordinate systems. Lagrange's equations, Hamilton's equations and small oscillations. Three lecture hours a week. *(Fall)*

(421) **PHYS 4222. Classical Mechanics II. (3) (3G)** Prerequisite: PHYS 4221. Continuation of PHYS 4221. Three lecture hours a week. *(Spring)*

(331) **PHYS 4231. Electromagnetic Theory I. (3) (3G)** Prerequisites: PHYS 2231; MATH 2141 and 2171. The first course of a two-semester sequence. Topics considered include electrostatics and magnetostatics in free space and in matter, the motion of charged particles in electric and magnetic fields, capacitance, dielectric theory, field energy, electromagnetic induction and inductance, vector and scalar potentials, magnetic properties of matter. Maxwell's equations, solutions of Maxwell's equations in free space and in matter, propagating electromagnetic waves, and boundary value problems. Three lecture hours a week. *(Fall)*

(431) **PHYS 4232. Electromagnetic Theory II. (3) (3G)** Prerequisite: PHYS 4231. Continuation of PHYS 4231. Three lecture hours a week. *(Spring)*

(341) **PHYS 4241. Modern Physics. (3) (3G)** Prerequisites: PHYS 2241; MATH 2141 and MATH 2171. Special relativity, postulates of quantum physics, solutions of the one-dimensional Schrodinger wave equation, the hydrogen atom, and spin. Three lecture hours a week. *(Spring)*

(441) **PHYS 4242. Quantum Mechanics. (3) (3G)** Prerequisite: PHYS 4241. An extension of PHYS 4241 to include more advanced topics such as generalized eigenvalue problems, angular momentum, spin, the hydrogen atom, and pertubation theory, with selected applications from atomic, solid state, and nuclear physics. Three lecture hours a week. *(Fall)*

(345) **PHYS 4251. Thermal Physics. (3) (3G)** Prerequisites: PHYS 2241 or consent of the Department. An introduction to heat, thermodynamics, kinetic theory, and statistical physics. Topics include classical thermodynamics, classical and quantum theory of specific heats, Maxwell-Boltzmann, Fermi-Dirac and Bose-Einstein distributions. Three lecture hours a week. *(Fall)*

(411) **PHYS 4261. Nuclear Physics. (3) (3G)** Prerequisites: PHYS 2231 and 2241, and MATH 2171. A study of the nucleus, radioactivity, nuclear reactions, fission, fusion interactions of radiation with matter and measurement of radiation. Three hours lecture per week. *(Spring) (Alternate years)*

(451) **PHYS 4800. Investigations. (0-2) (1-2G)** Prerequisites: junior standing and consent of the Department. An independent investigation by the student on a topic that is approved by the Department meeting as a body. This course may be repeated for up to four hours credit. Students enrolling in this course for 0 credit must take it *Pass/No Credit.* No more than two credit hours for this course may count toward the five additional hours required at the 3000/4000 level for the B.S. degree.

# Department of Political Science

*Chairperson:* Professor Arrington
*Professor Emeritus:* Winningham
*Professors:* Jamgotch, Lyons, McCoy, Mead, Mundt
*Associate Professors:* Brenner, Chernotsky, Dorin, Fleitas, Rhodes
*Assistant Professors:* C. Brown, R. Brown, Fox, Rassel
*Adjunct Professor:* Burkhalter

Political science is the study of politics: government, law, political behavior, public policy and political philosophy. The political science curriculum is designed primarily to afford broad and modern training in the study of political institutions and political behavior for students in the liberal arts and majors planning graduate work. It also affords career-oriented or pre-professional training for teaching, law, business, public relations or work in the mass media, domestic and foreign government service, and a variety of active roles in politics.

On the graduate level, the Department offers the Master of Public Administration, a professional degree for persons seeking training in public administration with specialization in local government management. (For more information, see the Graduate School section of this *Catalog.*)

## BACHELOR OF ARTS

A major in political science for the B.A. degree requires 30 semester hours of political science to include: (1) at least two courses from the subfield of American Politics and/or Public Administration; (2) one course in the subfield of Comparative Politics; (3) one course in the subfield of International Relations; (4) POLS 3220 (Research Methods), and POLS 3990 (Senior Project). No more than nine hours of credit from POLS 4400 (Practicum in Applied Political Science), POLS 4800 (Independent Study) and/or POLS 3400 (Internship in Political Science) can be offered to fulfill major requirements for a political science major.

Political science majors must complete 18 semester hours of work in other fields related to political science. The course work taken to meet this requirement shall be determined through student-adviser consultation, approved by the student's faculty adviser, and based on the student's interests and needs. The student's related work program should be specified in the student's file no later than the second semester of the junior year.

**Concentration in International Studies.** Students may opt to receive the Bachelor of Arts with a concentration in International Studies. Requirements include at least 18 hours (of a total of 30) in courses listed under International Politics, and/or Comparative Politics and Area Studies. Majors seeking this concentration are encouraged to diversify their course work by completing the minor in International Studies. (The fulfillment of this requirement satisfies the Department's general related work requirement.) For information on the minor in International Studies, see page 225.

## POLITICAL SCIENCE MINOR

The political science minor requires: (1) 18 semester hours of political science to include at least one course from the subfield of American Politics (including Public Administration), one course from the subfield of Comparative Politics, and one course in the subfield of International Relations; and (2) a minimum GPA of 2.0 in the 18 (or more) hours attempted for the minor.

**Honors Course.** The Department of Political Science offers an introductory honors course open to honors students from all disciplines. The course is entitled "Honors Seminar in Political Science" and investigates basic issues in the discipline. There are no course prerequisites for enrollment. For more information, contact the Chairperson, Department of Political Science.

## CURRICULUM OUTLINE
## FOR THE POLITICAL SCIENCE MAJOR
## LEADING TO THE B.A. DEGREE

### Freshman Year

| | |
|---|---|
| POLS 1110, 1130 or 1150 | 3 |
| English 1101 | 3 |
| Foreign Language 1201, 1201L | 4 |
| Earth Sciences 1101, 1101L or Biology 1110 | 4 |
| | 14 |

| | |
|---|---|
| POLS 1110, 1130 or 1150 | 3 |
| English 1102 | 3 |
| Foreign Language 1202, 1202L | 4 |
| Mathematics 1101 | 3 |
| GOAL III | 3 |
| | 16 |

### Sophomore Year

| | |
|---|---|
| POLS 1110, 1130 or 1150 | 3 |
| POLS 3000-level course | 3 |
| Earth Sciences 3100 or Biology 2111 | 4 |
| Mathematics 1222 | 3 |
| GOAL V: (A) | 3 |
| | 16 |

| | |
|---|---|
| POLS 3000-level course | 3 |
| American Politics Elective | 3 |
| GOAL I: (W) | 3 |
| GOAL V: (L) Elective | 3 |
| GOAL VI: Elective | 3 |
| | 15 |

### Junior Year

| | |
|---|---|
| POLS 3000-level course | 3 |
| GOAL VI: (X) | 3 |
| Electives | 9 |
| | 15 |

| | |
|---|---|
| POLS 3220, 3220L | 4 |
| POLS 3000-level course | 3 |
| Electives | 9 |
| | 16 |

### Senior Year

| | |
|---|---|
| POLS 3990 | 3 |
| POLS 3000-level course | 3 |
| Electives | 3 |
| | 15 |

| | |
|---|---|
| Electives | 13 |
| | 13 |

Note: The Political Science curriculum is not highly structured; many of the requirements can be fulfilled in a variety of course sequences, with many choices of specific courses. Thus, the above curriculum should be seen as a possible approach to meeting the requirements, which the student may want to vary, upon consultation with his or her adviser, according to particular needs and circumstances.

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

## POLITICAL SCIENCE (POLS)

Course offerings, including introductory courses, are divided into the following major subfields: American Politics, Comparative Politics and Area Studies, International Relations, Political Theory, Public Administration, and Research in Political Science.

### AMERICAN POLITICS

**Courses for Undergraduates**

(110) **POLS 1110. Introduction to American Politics. (3)** Role of the President, Congress, Supreme Court and national administrative agencies in the American political system. Relationship between the American people and their political institutions with emphasis upon political culture, the electoral process, political parties, interest groups and political communication. *(Fall, Spring, Summer) (Evenings)*

**POLS 1720. Honors Seminar in Political Science. (3)** Prerequisite: permission of the Department. Investigation of the basic issues of politics, e.g., democracy, pluralism, justice, equality, freedom, interdependence and the relationship between people and their political institutions, as well as comparisons among nations. *(On demand)*

**Courses for Advanced Undergraduates**

(301) **POLS 3101. Political Socialization. (3)** Processes by which the political culture of the society is transmitted, formally and informally, to individual members. Learning process, the agents of socialization, the content of the learning and the consequences of political socialization for the functioning of the political system. *(Fall)*

(303) **POLS 3103. Public Opinion and the Mass Media. (3)** The nature and influence of public opinion and the effects of the news media on public opinion and political behavior. Research on the development and content of public opinion and social psychological studies on the process of opinion change. *(Spring)*

(304) **POLS 3104. Mass Media and Politics. (3)** Relationship between the media in the United States and (1) the political activities of individual citizens and (2) governmental policy making. Ownership and control of the media, government regulation of the media, news programming and media impact on voter behavior and governmental policy making bodies. *(On demand)*

(305) **POLS 3105. Voting and Elections. (3)** Psychological, sociological and political variables that influence voting behavior and that affect electoral stability and change with emphasis on studies derived from survey research. *(On demand)*

(309) **POLS 3109. Political Parties and Interest Groups. (3)** Analysis of the role played by political parties and interest groups in the American political system. *(On demand)*

(311) **POLS 3111. The Congress. (3)** Analysis of the role of the Congress in the American political system and its relationships with the other branches of government. Recruitment and socialization of congressmen, the committee system and roll call analysis. *(Spring)*

(312) **POLS 3112. The Presidency. (3)** Analysis of the role of the Presidency in the American political system and its relationships with the other branches of government. Strategies of presidential nomination and election, the sources and indicators of presidential power, how those who have held the office have shaped it and been shaped by it. *(Fall)*

(313) **POLS 3113. Judicial Decision Making. (3)** Survey of the empirical studies concerning the determinants of the behavior of judges. *(On demand)*

(314) **POLS 3114. American Constitutional Law. (3)** Development of American constitutionalism, with a major emphasis on the roles played by the Supreme Court in the emergence of the American political system. Studies the justices as intellectual personalities engaged in the formulation of national policies. Utilizes Supreme Court decisions and opinions, histories, biographies and political science analyses to study the evolution of governmental powers and individual rights from colonial America through the end of the Roosevelt Court or Stone Court in 1946. *(Fall, Spring, Summer)*

(315) **POLS 3115. Civil Rights and Liberties. (3)** Supreme Court decisions relating to civil rights and liberties. *(Fall)*

(316) **POLS 3116. Judicial Process. (3)** Analysis of the structure and functions of federal and state courts in the context of the American political system. Emphasis upon the roles of judges, juries, counsel, litigants, police, interest groups and other actors in the adjudication processes. *(Spring)*

(317) **POLS 3117. Politics of Criminal Law. (3)** Politics of the Supreme Court interactions with the Congress, Presidency, Justice Department and the states in the formulation of policies related to the criminal law. *(On demand)*

(318) **POLS 3118. Law and Social Change. (3)** Relationship between law and social changes; emphasis on the strengths and weaknesses of courts in bringing about social changes. *(Spring)*

(319) **POLS 3119. State Politics. (3)** Comparative analysis of the 50 states, utilizing socio-economic characteristics, structural traits and policy outputs as the primary variables of interest. *(On demand)*

(320) **POLS 3120. Politics of the South. (3)** Selected political patterns and recent trends within the 11 states of the southern United States. Basic elements of continuity and change that characterize southern politics. *(On demand)*

(321) **POLS 3121. Urban Politics. (3)** Analysis of the political processes in the nation's metropolitan areas and the adjustments and responses of the U.S. governmental system in attempting to cope with the urban area. *(Summer) (On demand)*

(322) **POLS 3122. Contemporary Urban Problems. (3)** A study of selected urban problems, including an analysis of the causes and consequences of governmental policies designed to cope with these problems. Topics of interest would include: crime and law enforcement, poverty and welfare, urban transportation, education, pollution, housing and redevelopment, and urban revenue and expenditure patterns. *(Spring)*

(324) **POLS 3124. U.S. Domestic Policy. (3)** Examination of the processes of and influences on policy making, including goals and objectives of current U.S. domestic policy. Focus on major policy areas; may include such topics as fiscal and monetary policy, education, transportation, management of national economy, and agriculture, among others. *(On demand)*

## COMPARATIVE POLITICS AND AREA STUDIES

### Courses for Undergraduates

(130) **POLS 1130. Politics in Foreign Nations. (3)** Political comparisons among nations. Diverse geographical emphases, including some of the following: Latin America, the Atlantic communities of the West, Central and Eastern Europe, the Middle East, Africa, Central Asia, East Asia and Southeast Asia. *(Fall, Spring, Summer) (Evenings)*

### Courses for Advanced Undergraduates

(331) **POLS 3131. The Nature of Political Change. (3)** Comparative study of political change with reference to problems of reform, revolution and nation-building. *(On demand)*

(323) **POLS 3133. Women and Politics. (3)** Examines the political roles of women in electoral and non-electoral political systems in diverse regions of the world. *(On demand)*

(335) **POLS 3135. Political Violence. (3)** Designed to address four questions: (1) What is political violence? (2) Why does it occur? (3) What is its relationship to other political processes? (4) What is its impact on society? The emphasis of this course, while drawing on examples from contemporary American and foreign scenes, is on examining manifestations of violent political behavior such as pathological violence, conspiratorial violence, collective violence and government violence. *(On demand)*

(336) **POLS 3136. Comparative Urban Politics. (3)** Urban growth, urban problems and political response in cross-national perspective. Focus on urban policy process including political explanations for variations in national urban growth and structure. Attention to selected case and comparative studies on the U.S., Europe, Latin America, Africa and Asia. *(On demand)*

(337) **POLS 3137. Political Corruption. (3)** The use of public office for private ends in the United States and in comparative perspective. *(On demand)*

(341) **POLS 3141. Government and Politics of Western Europe. (3)** Comparative analysis of selected West European governments including Great Britain, France, Germany and Italy. *(On demand)*

(343) **POLS 3143. African Politics. (3)** A comparative perspective on the politics of independence in sub-Saharan Africa and on the performance of the new political systems there in terms of national and international integration and the modernization of traditional societies and economies. *(On demand)*

(345) **POLS 3145. Government and Politics of the Soviet Union. (3)** The origins of Bolshevism and the substance and role of Marxist-Leninist ideology. The structure and functions of the Communist Party of the Soviet Union (CPSU). The principles of Soviet politics and the instruments of rule. The Soviet political system in transition and its relationship to world communism. *(On demand)*

(346) **POLS 3146. Communist Politics in Comparison. (3)** Studies the most dynamic features of communist public order systems including the Soviet Union, Poland, Czechoslovakia, Hungary, Yugoslavia, Cuba and the People's Republic of China. Compares ideologies, party leaderships, youth movements, interest groups, political dissent and the politics of human mobilization and national development. *(On demand)*

(347) **POLS 3147. Government and Politics of Latin America. (3)** Comparative study of the political development of Latin American political systems with reference to selected aspects and problems of contemporary politics in the region. *(On demand)*

(348) **POLS 3148. Government and Politics of China. (3)** The origins, development and maintenance of the Chinese political system. The organization and function of the Chinese Communist Party (CCP) and other political groups. The impact of tradition on contemporary Chinese politics. *(On demand)*

(349) **POLS 3149. Government and Politics of Asia—Democratic Systems. (3)** Political behavior and the growth of democratic political institutions in selected Asian states, particularly Japan. Emphasis on the nature of political change and political process—political participation and recruitment, political socialization, party systems and voting behavior, policy formation. Cross-national comparison with non-Asian democratic systems. *(On demand)*

## INTERNATIONAL POLITICS

### Courses for Undergraduates

(150) **POLS 1150. Introduction to International Politics. (3)** Analysis of politics among nations: material and psychological sources of national power; the role of law, force and diplomacy in world politics; problems of peace and disarmament; and international organization. *(Fall, Spring, Summer) (Evenings)*

### Courses for Advanced Undergraduates

(351) **POLS 3151. International Political Economy. (3)** Political dynamics of economic relationships among industrially advanced nations. Attention is focused on the political aspects of monetary, trade, and investment relationships and the political difficulties involved in coordinating policy and maintaining effective international management. *(On demand)*

(352) **POLS 3152. Politics of Development. (3)** This course examines the political factors underlying the economic relations between developed and developing nations. Attention is focused on the political forces shaping global negotiations for political and economic reform, the proposals of developing nations for the creation of a new international development strategy, and the responses of developed nations to these proposals. *(On demand)*

(353) **POLS 3153. Political Foundations of International Order. (3)** The structure, processes and problems of general and regional international organizations, and the origins and contemporary role of international law. *(On demand)*

54) **POLS 3154. Investment in Human Survival. (3)** Investigation of the major challenges to human survival posed by population excess, food shortages, resource depletion, ecological abuse, social injustice and the arms race. Contributions from various academic fields are drawn together for political analysis and a design of world futures to elevate the quality of life. *(Spring)*

57) **POLS 3157. American Foreign Policy. (3)** The evolution of U.S. national security interests and contemporary decision making. Explores both domestic resources and international determinants of foreign policy, and emphasizes strategic and tactical responses to the critical global problems of our time. *(On demand)*

59) **POLS 3159. Soviet Foreign Policy. (3)** The concepts, content and evolution of Soviet foreign relations, with emphasis upon change and continuity in Russian and Soviet policies. Contemporary problems of Soviet diplomacy with other world powers and with the Marxist-Leninist nations of the Communist international system. *(On demand)*

61) **POLS 3161. Problems of Defense and National Security Policy. (3)** Investigates major concepts of war and the problems of arms control, escalation and the proliferation of nuclear weapons. Examines trends and conditions of international conflict, technological change and domestic political environments as they relate to defense and national security. *(On demand)*

62) **POLS 3162. International Law. (3)** An historical and political analysis of the sources and development of international law. Particular attention is given to the role of modern international law in the relations of nation-states and its application to contemporary global problems. *(On demand)*

65) **POLS 3165. East Asia in World Affairs. (3)** An examination of the basic factors governing East Asia's role in world affairs, both traditionally and in the present day. *(On demand)*

## POLITICAL THEORY

71) **POLS 3171. History of Classical Political Thought. (3)** Major concepts and systems of political thought from Plato to the 17th century. *(On demand)*

73) **POLS 3173. History of Modern Political Thought. (3)** Major concepts and systems of political thought from the 17th century to the present. *(On demand)*

75) **POLS 3175. Law, Justice and Morality. (3)** An analysis of such law-related issues as justification for criminal punishment, the obligation to obey the law, the enforcement of morals and war and morality. *(On demand)*

## PUBLIC ADMINISTRATION

83) **POLS 3183. Administrative Behavior. (3)** The role of the administrator and public bureaucracy in modern democratic society. Particular attention will be given to the interplay of forces created by executives, legislators, political parties and interest groups. *(Fall, Spring)*

84) **POLS 3184. Decision Making in Public Administration. (3)** Examination of major schools of decision making theory: rationalism, incrementalism and mixed-scanning. Use of these approaches in public administration in budgeting, organization and program design, and personnel will be studied, using problem sets and simulation techniques. *(Fall, Spring)*

87) **POLS 3187. Urban Administration. (3)** A study of administration in the context of the urban setting. Attention given to urban governmental bureaucracies, their response to and interaction with their environments, and their roles in developing urban policy. *(On demand)*

**Courses for Advanced Undergraduates and Graduate Students**

**POLS 4183. Fundamentals of Public Administration. (3) (3G)** Introduction to the theory and practice of public administration at the graduate level. Intellectual heritage of the field and the nature of administration with emphasis on the administration process within the larger political environment. (Credit not given for both POLS 3183 and POLS 4183.) *(On demand)*

**POLS 4184. Public Sector Organization Theory. (3) (3G)** Decision making theories including approaches drawn from fields other than political science, e.g., psychology, sociology and economics. Focus on nature and setting of decision making in public sector organizations. (Credit not given for both POLS 3184 and POLS 4184.) *(On demand)*

## RESEARCH IN POLITICAL SCIENCE

(391) **POLS 3220. Research Methods in Political Science. (4)** Prerequisites: (1) junior standing; (2) nine hours of political science, three each in American politics, international relations, and comparative politics and; (3) MATH 1222. An introduction to research methods in political science to include a brief consideration of the following topics: philosophy of science literature; the place of research methods in the discipline of political science; research design; research strategies and techniques; data interpretation. Three lecture hours and one two-hour lab period per week. *(Fall, Spring)*

(490) **POLS 3990. Senior Thesis. (3)** Prerequisite: POLS 3220. The student completes an article-length research paper under the supervision of a member of the faculty. The paper must involve quantitative or other methods of modern political analysis. *(Fall, Spring)*

## TOPICS IN POLITICAL SCIENCE

(300) **POLS 3000. Selected Topics in Political Science. (1-4)** An intensive study of a political topic. The particular topic investigated may vary from semester to semester, and a student may take more than one course under this number. *(On demand)*

(480) **POLS 3400. Internship in Political Science. (3-6)** Practical experience in politics by working for a party, campaign organization, political office holder, news medium, government agency or other political organization. Minimum of 150 working hours for three hours credit; minimum of 300 working hours for six hours credit. No more than six credits may be received through this course. *Pass/No Credit* grading only. *(Fall, Spring, Summer)*

(495) **POLS 3700. Honors Seminar. (4)** Prerequisite: approval by departmental Honors Committee. An intensive study of a selected topic in political science, designed to challenge and develop the intellectual ability of the participants. *(On demand)*

(496) **POLS 3701. Honors Thesis. (4)** Prerequisite: approval by the departmental Honors Committee and completion of POLS 3700 with a grade of *A*. Research and writing of an honors thesis. *(On demand)*

**Courses for Advanced Undergraduates and Graduate Students**

**POLS 4000. Advanced Topics in Political Science. (1-4) (1-4G)** Intensive study of an advanced political topic. Topics may vary from semester to semester and a student may take more than one course under this number. *(On demand)*

(399) **POLS 4400. Practicum in Applied Political Science. (1-3) (1-3G)** Prerequisite: permission of the instructor. This course provides students with the opportunity to apply political science concepts in a simulated (real-world) setting under the supervision of a faculty member. May be repeated for credit with departmental permission. *(Spring, Summer)*

(400) **POLS 4800. Independent Study. (1-3) (1-3G)** Prerequisite: consent of the instructor. Supervised investigation of a political problem that is (1) of special interest to the student; (2) within the area of the instructor's special competence; and (3) normally an extension of previous course work with the instructor. A student may take more than one course under this number but not more than three hours in any particular semester. *(Fall, Spring, Summer)*

# Department of Psychology

*Chairperson:* Professor Cann
*Professors:* Calhoun, Diamant, Goolkasian, Grimsley, Maisto, Selby, Simono, Toner
*Associate Professors:* Fernald, Gilmore, Lamal, Long, Puglisi, Siegfried, Sohn, Tedeschi, Terry, Wachowiak, Wetherington, Windholz
*Assistant Professors:* Cook, Lee, Sultan
*Lecturers:* Kaplan, Kappius, Van Wallendael

Psychology is the study of behavior. Psychologists are interested in discovering new knowledge about human and animal behavior and in applying that knowledge. Some of the questions psychology considers are:

How do we learn?
Why do people develop behavior disorders?
What are the changes involved in moving from infancy to adulthood?
How do other people influence our behavior?
How is behavior regulated by the brain?
How do we perceive the physical world?

Psychology is a young and a dynamic science and profession. Most of what we know has been learned in this century. Much is left to be learned by the psychologists of the future.

The Psychology Department offers an undergraduate major and a minor in psychology, as well as a Master of Arts degree. The primary objective of the undergraduate program is to provide a solid background in the fundamentals of psychology as a science. Graduates of the program should be prepared for a variety of careers or for graduate study.

Although many careers in psychology require an advanced degree, opportunities for individuals with a bachelor's degree in psychology include serving as a teacher or psychological assistant in social service agencies, mental health centers, child care centers, centers for the retarded or the emotionally disturbed, and juvenile delinquent or predelinquent homes. Students whose interests are more laboratory-oriented might become laboratory technicians or research assistants. Also, many psychology majors find their skills useful in various areas of business, such as management, advertising, personnel, public relations and sales.

Graduate school is a possibility after the student completes the B.A. degree. For a psychologist with a master's degree or doctorate, the career opportunities grow. (See the Graduate School section in this *Catalog* for information on the M.A. program at UNCC.) In addition, many psychology graduates broaden their skills by attending graduate schools in the areas of business, counseling, criminal justice, education and law.

## BACHELOR OF ARTS

A major in Psychology leading to the B.A. degree consists of 29 hours of psychology. These hours must include General Psychology (1101 and 1101L), Research Methodology (2102), History and Systems (3103), a senior seminar (3612, 3613, 3619, 3625, 3635, 3650, 3670) and two courses from each of the following lists:

**Experimental Options**

Hereditary Behavior (3117)
Introduction to Behavior Modification (2112)
Comparative Psychology (3110)
Psychology of Learning (3111)
Motivation (3114)
Sensation and Perception (3115)
Human Cognitive Processes (3116)
Physiological Psychology (3113)
Basic Processes in Psychological Assessment (3140)

**Developmental/Social/Applied Options**

Child or Adolescent Psychology (2120, 2121)
Adjustment or Abnormal Psychology (2150, 3151)
Industrial/Organizational Psychology (2171)
Social Psychology (3130)
Psychology of Personality (3135)

The additional courses necessary to fulfill the 29-hour requirement of the major should be selected to aid the student in the attainment of personal goals. However, the student cannot include more than three hours credit in PSYC 3405 and three hours credit in PSYC 3806 in the 29-hour requirement of the major, nor will the student be allowed to take more than eight hours in PSYC 3405 or PSYC 3806.

Other specific course requirements for majors are MATH 1222 (Elements of Statistics) and six hours of course work approved for Goal VI (Understanding the Individual, Society, and Culture) exclusive of psychology courses. All majors must satisfy the University general education requirements or specific requirements for the B.A. degree. For more information on requirements, see pages 73-77.

The student must also develop an area of related work which consists of 18 semester hours to be arranged by the student and the faculty adviser. Related work should be considered in terms of the fulfillment of the individual's vocational and educational goals. The completion of a minor or second major fulfills the related work requirement. Students who receive **teacher certification** may use the education sequence as related work.

**Course Sequences Within the Major.** The Psychology Department offers course sequences designed to provide a more in-depth exposure to certain areas of psychology. Sequences are currently available in **Behavior Modification, Child Psychology, Clinical Psychology, Industrial Psychology** and **Psychometrics.** Detailed information about these sequences is contained in the Psychology Department Student Handbook which is available in the Psychology Office.

## PSYCHOLOGY MINOR

A minor in psychology consists of 19 semester hours of psychology to include PSYC 1101, 1101L and a minimum of one course from both the experimental options group and the developmental/social/applied group. A minimum of six hours of course work at the 3000 level or above is required. No more than three semester hours of PSYC 3806 may be counted toward the minor and PSYC 3405 may not be used for the minor.

## HONORS PROGRAM IN PSYCHOLOGY

The Psychology Department has a limited program of honors work in psychology. Upper-level honors courses are offered for exceptionally qualified majors, and special honors sections of lower-level courses, including General Psychology, are open to outstanding students in any discipline.

*Admission.* Admission to honors course work is by permission of the Psychology Honors Committee for both majors and nonmajors. A minimum GPA of 3.0 is required for admission to courses.

*Courses.* The Psychology Department offers honors sections of many of its courses, including General Psychology, Child Psychology, Abnormal Psychology and Research Methods. A two-semester honors individual research sequence is offered for students involved in thesis work.

*Certification Requirements.* To graduate with honors in psychology, a student must complete nine hours of psychology honors courses and a six-hour honors thesis project.

## RECOMMENDED CURRICULUM FOR THE PSYCHOLOGY MAJOR LEADING TO THE B.A. DEGREE

### Freshman Year

| | |
|---|---|
| PSYC 1101 | 3 |
| PSYC 1101L | 1 |
| Mathematics 1101 | 3 |
| English 1101 | 3 |
| GOALS Requirement or Elective | 3-4 |
| | 13-14 |

| | |
|---|---|
| PSYC Elective | 3 |
| Mathematics 1222 | 3 |
| English 1102 | 3 |
| GOALS Requirement or Elective | 6-7 |
| | 15-16 |

### Sophomore Year

| | |
|---|---|
| PSYC 2102 | 4 |
| PSYC Elective | 3 |
| Related Work | 3 |
| GOALS Requirement or Elective | 9-10 |
| | 13-17 |

| | |
|---|---|
| PSYC Elective | 3 |
| Related Work | 3 |
| GOALS Requirement or Elective | 9-10 |
| | 15-16 |

### Junior Year

| | |
|---|---|
| PSYC Elective | 3 |
| Related Work | 3 |
| GOALS Requirement or Elective | 9 |
| | 15 |

| | |
|---|---|
| PSYC Elective | 3 |
| Related Work | 3 |
| GOALS Requirement or Elective | 9 |
| | 15 |

### Senior Year

| | |
|---|---|
| PSYC 3103 | 3 |
| Related Work | 3 |
| GOALS Requirement or Elective | 9 |
| | 15 |

| | |
|---|---|
| PSYC Seminar | 3 |
| Related Work | 3 |
| GOALS Requirement or Elective | 9 |
| | 15 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

### PSYCHOLOGY (PSYC)

(101) **PSYC 1101. General Psychology. (3)** A survey of the field including such topics as learning, emotions, motivation, personality, psychological testing and abnormal behavior. Emphasis on psychology as a behavioral science. May be taken with or without the lab. All psychology majors and those who wish to apply this course as partial fulfillment of the University science and technology (GOAL IV) requirement must take PSYC 1101L during the same semester in which they take PSYC 1101. *(Fall, Spring, Summer) (Evenings)*

(101L) **PSYC 1101L. General Psychology Laboratory. (1)** An introduction to laboratory equipment and procedures. One two-hour laboratory period per week. (May not be taken apart from the lecture portion of PSYC 1101 except by permission of the Department.) *(Fall, Spring, Summer) (Evenings)*

(241) **PSYC 2102. Research Methodology. (4)** Prerequisites: PSYC 1101 and 1101L, and MATH 1222. Experimental, observational and correlational methods of psychological research. Basic concepts of philosophy of science will also be discussed. Emphasis on methodology rather than content and applicability of methods to current topics in psychology. Three lecture hours and one two-hour laboratory period a week. *(Fall, Spring)*

(202) **PSYC 2109. Educational Psychology. (3)** Prerequisite: PSYC 1101. The psychology of learning; problems related to concept formation and application of behavior modification techniques to the classroom. *(Fall, Spring, Summer)*

(296) **PSYC 2112. Introduction to Behavior Modification. (4)** Prerequisite: PSYC 1101. Methods and constructs of behavior modification including the application of the methods to laboratory research. Three lecture hours and one two-hour laboratory period a week. *(Fall)*

(220) **PSYC 2120. Child Psychology. (3)** Prerequisite: PSYC 1101. Psychological development in infancy and childhood, including the development of learning, thought, language, social relations, intelligence and morality. Remedial measures suggested in dealing with early child tendencies which might otherwise lead to severe academic and social difficulties. *(Fall, Spring, Summer)*

(230) **PSYC 2121. Adolescent Psychology. (3)** Prerequisite: PSYC 1101. Developmental and psychological characteristics of adolescence with emphasis on research methods and familiarity with case studies school and personality problems. *(Fall, Spring)*

(203) **PSYC 2150. Psychology of Adjustment. (3)** Prerequisite: PSYC 1101. The study of the process of adjustment. Consideration is given to psychological reactions to critical problems encountered in modern life. Introduction to different approaches to psychotherapy. *(Fall, Spring, Summer)*

(271) **PSYC 2171. Introduction to Industrial/Organizational Psychology. (3)** The study of people at work; what motivates people to work and what leads to satisfaction, alienation or performance; how to lead others; the structure of an organization and processes of communication, decision making and conflict; socialization through selection and training; measurement of individual contributions; the design of work itself; ways to change and develop entire organizations. *(Fall, Spring, Summer)*

(401) **PSYC 3001. Topics in Psychology.** Prerequisite: consent of the instructor. Examination of special psychological topics. May be repeated for credit as topics vary.

(461) **PSYC 3103. History and Systems of Psychology. (3)** Prerequisite: PSYC 1101. Influential psychological systems and their historical antecedents. Emphasis on Gestalt, psychoanalytic and behavior theory.

(310) **PSYC 3110. Comparative Psychology. (3)** Prerequisite: PSYC 1101. Animal and human behavior from a comparative point of view. Emphasis on the classification of behavior patterns as well as the origin and development of these patterns. *(Spring)*

(311) **PSYC 3111. Psychology of Learning. (3)** Prerequisite: PSYC 1101. (Completion of PSYC 2102 is strongly recommended.) Major theories and empirical findings in the area of learning. *(Fall, Spring, Summer)*

(396) **PSYC 3112. Consequences and the Sources of Behavior Control. (4)** Prerequisite: PSYC 2112. Application of the principles and techniques of the experimental analysis of behavior to a variety of behavior problems in a number of different environments with an emphasis on extrapolation to new and different problems and settings. (Students will be required to develop individualized projects utilizing the material discussed in class.) *(On demand)*

(451) **PSYC 3113. Physiological Psychology. (3)** Prerequisite: PSYC 1101. The relationship of physiological systems to integrated behavior. Emphasis on neural aspects of behavior and current studies in relation to drug and other stimuli. *(Fall, Summer)*

(312) **PSYC 3114. Motivation. (3)** Prerequisite: PSYC 1101. Current theories and research in the area of human and animal motivation. *(Yearly)*

(313) **PSYC 3115. Sensation and Perception. (3)** Prerequisite: PSYC 1101. (Completion of PSYC 2102 is strongly recommended.) Sensory and perceptual processes, including such topics as psychophysics, information processing and color. *(Fall, Spring)*

(430) **PSYC 3116. Human Cognitive Processes. (3)** Prerequisite: PSYC 1101. Processes involved in such complex human behaviors as language (acquisition and usage), memory and problem solving with emphasis upon experimental findings and current theories. *(Fall, Spring)*

315) **PSYC 3117. Hereditary Behavior. (3)** Prerequisite: PSYC 1101. Potential genetic and environmental contributions to behavior and psychological processes: History of the nature-nurture issue in psychology; animal and human research methods; statistical analysis of behavior-genetic data; and the heritability of learning ability, intelligence, personality and psychopathology. *(Spring)*

480) **PSYC 3118. Research Methods in Physiological Psychology. (4)** Prerequisites: PSYC 1101 and permission of the instructor. Current laboratory techniques in physiological psychology, including basic surgeries, lesioning, stimulation, recording and histology. Three lecture hours and one two-hour laboratory period a week. *(On demand)*

320) **PSYC 3122. Cognitive and Language Development. (3)** Prerequisites: PSYC 1101 and 2120. Development of language, thought and related behaviors in children, including information processing, Piaget's theory of cognitive development, acquisition of sentence structure, and biological foundations of language. *(Alternate years)*

321) **PSYC 3123. Social and Personality Development. (3)** Prerequisites: PSYC 1101 and 2120. Social and personality development of children, including infant social behavior, socialization practices, independence and achievement, aggression, sex-role development and moral development. *(Alternate years)*

322) **PSYC 3124. Psychology of Adult Development and Aging. (3)** Prerequisite: PSYC 2120 or 2121, or equivalent. Psychological development through adulthood and old age. Emphasis on processes underlying continuity and change in adulthood, including personality and socialization, cognitive development and the psychophysiology of aging. *(Yearly)*

303) **PSYC 3130. Social Psychology. (3)** Prerequisite: PSYC 1101. The social behavior of individuals. Individuals' behavior in relation to others. Attitude change, social conflict, social interaction, social perception and social influence processes; general theories of social behavior and research approaches. *(Fall, Spring, Summer)*

305) **PSYC 3135. Psychology of Personality. (3)** Prerequisite: PSYC 1101. Current personality theories. Consideration given to psychoanalytic, physiological, trait and factor, the perceptual viewpoints in the light of contemporary research. *(Fall, Spring, Summer)*

301) **PSYC 3140. Basic Processes in Psychological Assessment. (3)** Prerequisites: PSYC 1101 and 1101L, and MATH 1222. Psychological testing, including scaling procedures, reliability and validity, correlational techniques used in test construction, a review of various kinds of psychological tests and basic approaches to test interpretation. *(Alternate years)*

404) **PSYC 3150. Introduction to Clinical Process. (4)** Prerequisites: PSYC 2150 and 3151. Theories of behavior intervention including behavioral management, crisis intervention and clinical assessment. The course includes a two-hour lab, involving behavioral rehearsal and practical training techniques. *(Fall)*

307) **PSYC 3151. Abnormal Psychology. (3)** Prerequisite: PSYC 1101. A history of psychopathology. Case studies, differential diagnosis, psychological dynamics of abnormal behavior, including theoretical, clinical and experimental contributions in the field. *(Fall, Spring, Summer)*

(420) **PSYC 3152. Child Psychopathology. (3)** Prerequisites: PSYC 1101, 2120 and 3151 or the equivalent. Principles of classification, assessment and treatment of children and adolescents who display deviant affective, cognitive and social behavior. *(Alternate years)*

(308) **PSYC 3155. Community Psychology. (3)** Social forces, particularly within the context of organizations and/or communities, which affect the development of psychopathology and/or personal competency, with emphasis on preventing psychopathology and increasing competency. Topics include the concept of prevention; assessment of organizations; communities and other environments; methods of instituting organizational and community change; evaluating the effects of community interventions; social policy analysis; and ethical issues involved in community work. *(Spring)*

(372) **PSYC 3172. Psychology of Personnel: Employee Selection and Classification. (3)** Prerequisite: PSYC 2171 or consent of instructor. Methods, techniques and procedures used to select and classify employees. *(Fall)*

(373) **PSYC 3173. Psychological Bases of Training Programs. (3)** Prerequisites: PSYC 1101 and 2171, or consent of instructor. Application of alternative theories about adult learning to the development and conduct of training programs in industry. Topics include how to develop training needs, a description of methods available to trainers such as programmed instruction and sensitivity training, and how to evaluate the effects of various training techniques. *(Spring)*

(489) **PSYC 3405. Practicum in Applied Psychology. (1-4)** Prerequisites: junior standing and permission of the instructor and the Psychology Department. Work in practical settings related to psychology under the supervision of a faculty member. May be repeated for credit with departmental permission. The student must have obtained approval in the semester preceding the semester in which the practicum is to be taken. Offered only on a *Pass/No Credit* basis. *(Fall, Spring)*

(496) **PSYC 3612. Seminar in Behavior Modification. (3)** Prerequisites: PSYC 2112 and 3112. Current issues in behavior modification, including an integration of principles, techniques and practical experiences. *(On demand)*

(493) **PSYC 3613. Seminar in Physiological Psychology. (3)** Prerequisites: PSYC 1101 and permission of the instructor. Intensive study of selected topics in physiological psychology, such as psychopharmacology, biofeedback and the neuro-physiological basis of learning and memory. *(Spring)*

(494) **PSYC 3619. Seminar in Experimental Psychology. (3)** Prerequisites: PSYC 1101 and permission of the instructor. In-depth examination of an area of current concern in the psychological laboratory. Each semester will have a different focus such as discrimination learning, memory, experimental analysis of behavior and attention. *(Fall)*

(495) **PSYC 3625. Seminar in Developmental Psychology. (3)** Prerequisites: PSYC 1101 and permission of the instructor. Concentrated examination of current issues and research in a field of developmental psychology including such topics as the concepts of development in historical and current usage, learning (especially in human infants), development of social relations, intelligence, cognitive abilities and the acquisition of language. *(Fall, Spring, Summer)*

(492) **PSYC 3630. Seminar in Social Psychology. (3)** Prerequisites: PSYC 1101 and permission of the instructor. Intensive study at the advanced level of topics of current research and theoretical interest in social psychology. *(Spring)*

(491) **PSYC 3650. Seminar in Human Adaptation and Behavior. (3)** Prerequisites: senior standing and permission of the instructor. Intensive reading and discussion in selected areas of psychology, such as stress, personality, emotions and psychopathology. *(Fall, Spring)*

(498) **PSYC 3655. Seminar in Community Psychology. (3)** Prerequisites: PSYC 2150 and 3151 or permission of the instructor. Application of psychological research findings to specific problems in the community with emphasis on problems hypothesized directly to affect psychological well-being. *(Alternate years)*

(497) **PSYC 3670. Seminar in Industrial Psychology. (3)** Prerequisites: PSYC 2171 and consent of instructor. Topics of current concern in industrial/organizational psychology and related disciplines including issues that affect individuals at work and organizations in society. *(Fall, Spring, Summer)*

(490) **PSYC 3806. Individual Studies in Psychology. (1-4)** Prerequisites: permission of the instructor and the Department. Directed individual study which may take the form of initiating, designing and conducting an original research problem or a critique and synthesis of existing research. May be repeated for credit. The student must have obtained approval in the semester preceding the semester in which the course is to be taken. *(Fall, Spring, Summer)*

**Courses for Advanced Undergraduates and Graduate Students**

504) **PSYC 4140. Tests and Measurements. (3) (3G)** Prerequisite: PSYC 1101. Psychological and educational measurements in current use with emphasis on structure, administration and application of group tests. Individual tests such as Stanford-Binet, WISC and WAIS will be reviewed. *(Alternate years)*

**Courses for Graduate Students and Advanced Undergraduates**

599) **PSYC 5006. Selected Topics in Psychology. (3) (3G)** Prerequisite: junior, senior or graduate standing. Examination of special psychological topics. *(On demand)*

501) **PSYC 5152. Psychology of Exceptional Children. (3) (3G)** Assessing and treating the exceptional child. Emphasis on current research in several diagnostic categories, including the emotionally disturbed, learning disabled, mentally retarded, physically handicapped and gifted. *(Alternate years)*

503) **PSYC 5153. Psychology of Mental Retardation. (3) (3G)** Psychological and sociological aspects of mental retardation in relation to adjustment and educational development. Emphasis on current research and diagnostic categories. *(Alternate years)*

# Department of Religious Studies

*Chairperson:* Associate Professor St. Clair
*Professors:* Underwood, Witherspoon
*Associate Professors:* Gestwicki, Meyer, Thomas
*Assistant Professor:* White

Religious Studies is an inquiry into the fundamental stories, myths, symbols and practices by which we as human beings have attempted to make sense out of ourselves and the worlds in which we live. Besides offering courses in Eastern and Western, ancient and modern religious traditions, the Department offers a number of courses that explore religious meaning in a variety of creative ways, through the study of myth and symbol, art and language, film and dreams. Attention is given to a wide range of attempts to deal with the ultimate questions about the nature of the cosmos, the nature of human beings, and the origins and destiny of human life. This wide-ranging emphasis places religious studies in dialogue with all the methods and disciplines of the liberal arts. The Department of Religious Studies makes an explicit commitment to free, non-dogmatic inquiry into religion from a pluralistic and cross-cultural perspective.

Most students major or minor in religious studies to gain a broad liberal arts education. With the flexibility of the program and its relationship to other areas of The University, students can meet the specific objectives of Religious Studies while taking a wide range of courses in other departments. Some students relate religious studies to definite vocational plans, often requiring further education in professional and graduate schools.

## BACHELOR OF ARTS

A student may satisfy the requirement for the religious studies major leading to the B.A. degree after completing either of the following programs:

**(A) Course Program in Religious Studies.** A student who elects this option will be expected to complete a minimum of 30 semester hours, which will normally include the following: 1101, 2101, 2102 and the Senior Seminar (3600), for a total of 12 hours. The 18 hours remaining to be completed for the major are expected to give the student a substantial breadth in religious studies. Within these guidelines, the student will develop the course of study in consultation with his or her adviser. Advising sessions with the entire Department may be arranged by the student and/or adviser to consider special requests or problems pertaining to the nature of an individual student's program.

**(B) Interdisciplinary Program in Religious Studies.** This option is intended to provide a course of studies which will make maximum use of the interdisciplinary aspects inherent in religious studies. Before the beginning of the junior year but after several courses in religious studies, a student may submit, after consultation with his or her adviser, a proposal for a program of study for the junior and senior years. If the proposal is approved by the Department, the student will satisfy the requirement for a major in religious studies by completing the approved program rather than by taking any specified number of religious studies courses. This is not an honors program, and any student may submit a proposal to the Department. A detailed description of this program may be obtained from the office of the Department of Religious Studies.

## RELIGIOUS STUDIES MINOR

A minor in religious studies consists of a minimum of 15 hours including RELS 1101 and two courses beyond the 2000 level. With the help of an adviser in Religious Studies, the student will select courses in at least two different areas of the discipline. Students are encouraged to take RELS 3600, though it is not required.

## COURSE DESCRIPTIONS

### RELIGIOUS STUDIES (RELS)

**Courses for Undergraduates**

101) **RELS 1101. An Introduction to Religious Studies. (3)** An introduction to the study of the religious dimension of human existence. *(Fall, Spring, Summer) (Evenings)*

110) **RELS 1110. The Long Search. (3)** A survey of the major religions of the world based on the film series *The Long Search.*

211) **RELS 2101. Introduction to Western Religious Thought. (3)** The major religions, myths, symbols, ideas and traditions that have informed the fundamental ways people in the West have seen themselves in the world. *(Yearly)*

212) **RELS 2102. Introduction to Eastern Religions. (3)** Selected religions of the East such as Islam, Hinduism, Buddhism, and Chinese and Japanese religions. Special emphasis on their world views as expressed in the functional use of myth and symbol in the tradition. *(Fall, Spring, Summer)*

213) **RELS 2104. Old Testament/Hebrew Scriptures. (3)** The Hebrew religious tradition from the perspective of its development in the culture of the ancient Near East. *(Yearly)*

214) **RELS 2105. New Testament and Christian Origins. (3)** Emergence of Christianity in its cultural context. Analysis of selected early Christian writings in English translation. *(Yearly)*

215) **RELS 2108. Religion in American Culture. (3)** The role of religion in the shaping of American culture. *(Fall, Spring)*

350) **RELS 3000. Topics in Religious Studies. (3)** Treatment of a special topic in religious studies. May be repeated for credit as topics vary.

360) **RELS 3010. Major Figure in Religious Studies. (3)** The life and works of a major figure who has contributed to religious studies. May be repeated for credit for different figures.

344) **RELS 3101. Greek Myths and Religions. (3)** The gods and goddesses, heroes and heroines in ancient Greek myths and religions; Greek myth and later Western religions; polytheism and monotheism; functions of myth; contemporary interpretations of Greek myth. *(Yearly) (Evenings)*

102) **RELS 3104. Hebrew Prophetic Religion. (3)** Prerequisite: RELS 2104 or consent of the instructor. The historical development of the prophetic movement from its origins to its culmination in the classical prophets of the eighth to sixth centuries B.C.

103) **REL 3107. The Psalms and Wisdom Literature of Israel. (3)** Prerequisite: RELS 2104 or consent of the instructor. The origin and content of the Psalms and the place of wisdom literature in the development of Hebrew thought.

127) **RELS 3110. Judaism. (3)** The development of Jewish religious thought from the Middle Ages to the present.

104) **RELS 3113. Jesus. (3)** Prerequisite: RELS 2105 or consent of the instructor. Jesus and the religion he taught from the point of view of the synoptic gospels. *(Alternate years)*

105) **RELS 3116. Paul. (3)** Prerequisite: RELS 2105 or consent of the instructor. The writings of St. Paul. The occasion, purpose and significance of each letter for the emerging Christian community. *(Alternate years)*

129) **RELS 3119. Christianity through Art and Architecture. (3)** Christian history from the catacombs to the 20th century. Focus on religious expression in pictorial art, architecture and sculpture. *(Alternate years)*

143) **RELS 3122. Western Esoteric Traditions. (3)** Traditions which emphasize that the highest wisdom is found in the inner self; gnosticism, mysticism, hermeticism, grail legends, alchemy.

141) **RELS 3125. Medieval Christianity. (3)** Christianity in the context of the culture of the High Middle Ages (1050-1350 A.D.).

(314) **RELS 3131. Islam. (3)** The development of the traditions in Islam with emphasis on Islamic culture, literature and mysticism. *(Alternate years)*

(340) **RELS 3134. Studies in Western Religious Thought. (3)** Selected works of major religious authors in the West.

(330) **RELS 3135. Religion in Nineteenth-Century America. (3)** Examination of religious thought, practices, and movements in 19th-century America.

(332) **RELS 3137. Contemporary Black Religion in America. (3)** Black religion since World War II. Emphasis on the influence of religion and religious leaders in the struggle for a Black humanity. *(Alternate years)*

(339) **RELS 3151. Primitive Religions. (3)** Religiouis conceptions of prehistoric humans as found in painting, sculpture, artifacts, burial practices, etc. Two or three selected examples of tribal religion in the modern period.

(311) **RELS 3154. Hinduism. (3)** The ancient Vedic traditions and the development of Hinduism. Emphasis is on the role of Hinduism in Indian civilization. *(Yearly)*

(312) **RELS 3157. Buddhism. (3)** The historical development of Buddhism with special attention given to its diverse manifestations in South Asia. *(Alternate years)*

(411) **REL 3160. Tibetan Religion. (3)** Prerequisite: RELS 2102 or consent of the instructor. The symbols, beliefs and practices of the Tibetan tradition. The fusion of the ancient native religion and Buddhism.

(315) **RELS 3163. Visual Mysteries of India. (3)** Prerequisite: RELS 2102 or consent of the instructor. The visual art of Hindus, Buddhists, Jainas and Muslims in the caves, temples, paintings and sculptures of India. *(Alternate years)*

(313) **RELS 3166. Taoism. (3)** Philosophical Taoism as nature mysticism. Comparison with nature mystics in the West. *(Alternate years)*

(406) **RELS 3169. Zen Buddhism. (3)** Prerequisite: RELS 2102 or consent of the instructor. Buddhist origins in India, development of the Ch'an (Zen) school in China and Japan, and emphasis on the formative influences of Zen on Japanese art and culture. *(Alternate years)*

(348) **RELS 3172. Religion in Asian Literature. (3)** Religious ideas and themes in the literature of the East. Examples chosen from such literary forms as the novel, the short story, autobiography, drama and poetry.

(301) **RELS 3201. The Meaning of Death. (3)** An investigation into the experience of death in the Western tradition. Philosophical, religious, existential, psychological and literary readings clarifying the conceptual problems in our ways of speaking about death. Understanding death as a horizon for understanding life. (Same as PHIL 3201.) *(Yearly)*

(304) **RELS 3202. The Limits of Language. (3)** What it means to be a linguistic creature living in a symbolic world.

**RELS 3204. Life-Study. (3)** An appreciation of the religious dimension in a human life-history. Based on concepts, principles and methods developed by Ira Progoff for working within the life-history of a person who lived in a previous generation. *(Yearly) (Evenings)*

**RELS 3205. Intensive Journal. (3)** Prerequisite: permission of the instructor. An appreciation of the religious dimension in one's own life-history. Based on the concepts, principles and methods developed by Ira Progoff for working within one's own life-history. *(Yearly) (Evenings)*

(305) **RELS 3206. Images and Experience. (3)** The relationship between religious experience and images, as manifested privately (dreams, fantasies, ideals) and publicly (religion, myth, art).

(334) **RELS 3209. Quest in Literature. (3)** The spiritual dimension of contemporary and traditional literature. Focus may be on an artist, genre (novel, poetry, drama) or theme.

(337) **RELS 3212. Films and Identity. (3)** Themes of religious identity alienation, search, discovery, sexuality and death as reflected in recent American movies and foreign films. Film laboratory required.

(336) **REL 3215. The Artist As Visionary. (3)** The role of visual imagination in the development of religious sensibilities. *(Alternate years)*

(345) **RELS 3218. Jung and Religion. (3)** The works of C.G. Jung as they relate to an understanding of religion and religious experience. Emphasis on his interpretations of myths and symbols as they appear in both Western and non-Western religions. His theories of creativity and the arts, religious expressions and quests for meaning. *(Yearly) (Evenings)*

(346) **RELS 3221. Religion and Psychology. (3)** Views of the self in relation to traditional religious views, particularly in the works of such people as Freud, Jung, Brown, Erikson, Skinner.

(333) **RELS 3224. Science, Technology and Human Vision. (3)** The relationship of science and religion, the place of the individual in a technological society and the visions of the scientific future.

(460) **RELS 3230. Languages of Sacred Texts. (3)** Prerequisite: consent of the instructor. The language and literature of a particular religious tradition. Aims at a level of proficiency to begin reading the sacred writings of a religion in the original language (Koine Greek, Biblical Hebrew, Classical Chinese, Sanskrit). May be repeated for credit when the subject matter changes. (Same as FORL 3050.) *(On demand)*

(342) **RELS 3242. Philosophy of Religion. (3)** Philosophical implications of religious experience including the definitions, development and diverse forms of the problems of belief and reason in modern thought. (Same as PHIL 3242.) *(On demand)*

(491) **RELS 3600. Senior Seminar. (3)** Required of majors in final year of studies. Others may be admitted with consent of the instructor. *(Fall)*

(490) **RELS 3800. Independent Studies. (1-3)** Prerequisite: consent of the instructor. May be repeated for credit. *(Fall, Spring)*

**Courses for Advanced Undergraduates and Graduate Students**

(450) **RELS 4000. Topics in Religious Studies. (3) (3G)** Prerequisite: consent of the instructor. May be repeated for credit.

(432) **RELS 4101. Religion and Modern Thought. (3) (3G)** The interaction of modern thought and modern religious sensibilities. *(Alternate years)*

**Courses for Graduate Students Only**

(690) **RELS 6800. Directed Studies. (3G)** Prerequisite: consent of the instructor. May be repeated for credit. *(Fall, Spring)*

# Department of Sociology and Anthropology

*Chairperson:* Associate Professor Rent
*Professors:* Goodnight, Michalowski
*Associate Professors:* Bertoli, Bonney, Dubisch, Ferraro, Forrest, Hutchison, Lance, Levy
*Assistant Professors:* Carlton-LaNey, Day, Krol, Latimore, Majeed, Mickelson, Pearson, Reichs
*Lecturers:* Aulette, Lowe, Medlin
*Adjunct Professors:* May, Robicsek, Williams

The Department of Sociology and Anthropology offers academic majors in Anthropology and Sociology leading to a Bachelor of Arts degree, and a concentration in Social Work. On the graduate level, the Department offers the M.A. degree in Sociology.

**Anthropology.** Anthropology is the study of humans and their cultures and is organized into four subfields: cultural anthropology, archeology, physical anthropology and linguistics. It focuses upon human cultural heritage and history and upon the biological and evolutionary aspects of humans which relate to cultural development. It emphasizes the comparative study of humans and the cross-cultural analysis of their institutionalized responses to fundamental human needs.

The study of anthropology is relevant for persons whose occupations and endeavors require an understanding of a variety of cultures. It is particularly useful for teachers of students from diverse cultural backgrounds, social workers and persons seeking careers in journalism and communications as well as persons who plan to work in or with foreign countries. It provides competencies needed for employment in such organizations as museums, highway departments (as archeologists), police departments (as physical anthropologists), the park service and the Bureau of Indian Affairs.

**Sociology.** Sociology is the scientific study of human social life. It focuses upon the forces which organize and structure societies and smaller groups as well as the forces which disorganize and threaten to dissolve them. As a science, sociology applies an objective and systematic method of investigation to identify the patterns and forms of social life and to understand the processes by which they are established and changed.

The study of sociology is attractive to persons seeking a liberal education and immediate employment as well as to persons preparing for further study and professional careers. As a liberal arts program, it enables students to understand the social contexts in which they find themselves and the social forces that shape personality, actions and interactions with others. As a pre-professional program it provides an excellent background for persons entering social work, law, teaching, the ministry, journalism, planning, public relations and personnel services. It also provides analytical skills related to market research and program evaluation in human services, sales, management and other business activities.

**Social Work.** Social work includes the study and enhancement of human social interaction. It focuses upon the prevention, treatment and control of problems in the social life of individuals, groups and communities. It blends knowledge from the social and behavioral sciences with social work theory and skills in the professional application of the helping relationship. The study of social work prepares persons for further study and careers in social welfare, including direct social service, family counseling and crisis intervention. It provides an excellent background for careers involving the planning, administration and evaluation of social services. It also provides knowledge and skills utilized by vocational rehabilitation counselors, probation and parole officers, medical and psychiatric social workers and other members of community and industrial social service organizations.

## ANTHROPOLOGY MAJOR: BACHELOR OF ARTS

A major in anthropology leading to the B.A. degree requires completion of 34 semester hours of anthropology, including ANTH 1101, 2141, 2151, 3101 and 3601; 18 semester hours of electives in anthropology, including at least six semester hours in cultural anthropology; and completion of ANTH 3601 with a grade of *C* or better. Also required are 18 semester hours of related work to be arranged in consultation with the student's adviser and organized around a region, an allied discipline or theme, or minor in another approved discipline. Students should consult the Department of Sociology and Anthropology concerning internships and field schools in anthropology and archeology.

## ANTHROPOLOGY MINOR

The minor in anthropology requires the completion of 18 hours of anthropology including ANTH 1101 and 15 hours of electives with at least one course in each of the subdivisions of anthropology: cultural anthropology, physical anthropology, and archaeology. A grade point average of at least 2.0 is required in the 18 hours of anthropology.

## SOCIOLOGY MAJOR: BACHELOR OF ARTS

A major in sociology leading to the B.A. degree consists of (1) a minimum of 32 semester hours of sociology; (2) a core curriculum of SOCY 1101, 3153, 4155, and 3156; (3) at least 23 hours at the 3000 and/or 4000 level (but may include 2090); (4) a distribution of elective courses selected from at least three of the following sub-areas: **Analysis** (SOCY 4154, 4656), **Community** (SOCY 4122, 4124, 3125, 4620, 5625), **Organizations** (SOCY 4111, 4115, 4112, 4135), **Process** (SOCY 3143, 4161, 4263, 2112, 3162), **Problems** (SOCY 2171, 3110, 4110, 4172, 4173, 3173), **Family** (SOCY 2132, 4632, 4163, 4261); and (5) a minimum of 18 semester hours of related work.

Related work is arranged by the student in consultation with an adviser and may consist of a concentration of courses: (1) within a single discipline; (2) selected from two complementary disciplines; or (3) focused upon a specific topic. Students in the **teacher certification program** may use the courses in the professional education sequence as their related work. Students should consult with the Department of Sociology and Anthropology about internship opportunities in sociology.

## SOCIOLOGY MINOR

The minor in sociology requires the completion of 18 semester hours in sociology including Introduction to Sociology and a theory course (SOCY 3153 or 4154 or another approved course). A grade point average of at least 2.0 is required in the 18 hours of sociology.

**Honors Course.** The Department offers an honors section of "Introductory Sociology," which is designed to introduce honors students to the basic ideas and methods of sociology. There are no course prerequisites for enrollment. Admission may be initiated by interested students or the Department.

## CONCENTRATION IN SOCIAL WORK

The Social Work program is designed primarily to prepare students for beginning professional practice and/or graduate study in social work. The curriculum is designed to familiarize the student with the development and philosophy of social work as a profession and the historical and contemporary contexts of social welfare as an institution. It provides for the acquisition and supervised application of basic knowledge, values, methods and skills of social work practice. Two options are available. Students may (1) complete requirements for the social work concentration described below or (2) fulfill the related work requirements of sociology, anthropology and various other disciplines through completion of 18 hours of social work courses. Field placement is not available to students who select the latter option.

**Requirements.** A concentration in social work requires a minimum of 35 semester hours including 21 hours of course work and 14 hours of field placement and seminar. The core courses in the social work concentration build upon each other and are taken in the following sequence: SOWK 2180, 2181, 3181, 3182, 3183, 3184 and 3280. Students must complete at least 12 hours of the core before they are approved for enrollment in the concurrent field placement sequence: SOWK 3482, 3683, 3484 and 3685. Concurrent placement requires that the student work two days per week in a social agency for an entire academic year. Students who are approved for block placement must complete all of the core courses before beginning placement. Block placement reuqires that students spend four and one-half days a week in an agency for one semester.

### SUGGESTED SEQUENCE FOR THE SOCIAL WORK CONCENTRATION WITH CONCURRENT FIELD PLACEMENT
**For Students Entering the Program as Sophomores**

**Sophomore Year:** *Fall* SOWK 2180; *Spring* SOWK 2181
**Junior Year:** *Fall* SOWK 3181, 3183; *Spring* SOWK 3182, 3184*
**Senior Year:** *Fall* SOWK 3482, 3683; *Spring* SOWK 3280, 3484, 3685

**SOWK 3184 may be taken during the semester listed or any subsequent semester.*
*Note: Students considering block field placement must consult their academic advisers to develop the necessary sequential scheduling.*

## SUGGESTED CURRICULUM OUTLINE FOR THE ANTHROPOLOGY MAJOR LEADING TO THE B.A. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| ANTH 1101 | 3 | ANTH 2141 | 4 |
| GOAL I Foreign Language | 4 | GOAL I Foreign Language | 4 |
| GOAL I English | 3 | GOAL I English | 3 |
| GOAL II Mathematics | 3 | GOAL II Mathematics, Logic or Computer Science | 3 |
| | 13 | | 14 |

### Sophomore Year

| | | | |
|---|---|---|---|
| ANTH 2151 | 3 | ANTH Elective | 3 |
| GOAL III | 3 | GOAL IV | 4 |
| GOAL IV | 4 | GOAL V: (A) | 3 |
| GOAL VI | 3 | GOAL VI: (X) | 3 |
| Related Work/Minor | 3 | Elective | 3 |
| | 16 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| ANTH 3101 | 3 | ANTH Elective | 3 |
| ANTH Elective | 3 | ANTH Elective | 3 |
| Elective | 3 | Related Work/Minor | 3 |
| GOAL V: (L) | 3 | Related Work/Minor | 3 |
| Related Work/Minor | 3 | GOAL I: (W) | 3 |
| | | Elective | 1 |
| | 15 | | 16 |

### Senior Year

| | | | |
|---|---|---|---|
| ANTH Elective | 3 | ANTH 3601 | 3 |
| ANTH Elective | 3 | Related Work/Minor | 3 |
| Related Work/Minor | 3 | Elective | 3 |
| Elective | 3 | Elective | 3 |
| Elective | 3 | Elective | 3 |
| | 15 | | 15 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## SUGGESTED CURRICULUM OUTLINE FOR THE SOCIOLOGY MAJOR LEADING TO THE B.A. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| SOCY 1101 | 3 | SOCY Elective | 3 |
| GOAL I Foreign Language | 4 | GOAL I Foreign Language | 4 |
| GOAL I English | 3 | GOAL I English | 3 |
| GOAL II Mathematics | 3 | GOAL II Mathematics, Logic or Computer Science | 3 |
| | 13 | | 13 |

### Sophomore Year

| | | | |
|---|---|---|---|
| SOCY Elective | 3 | SOCY 3153 | 3 |
| GOAL III | 3 | GOAL IV | 4 |
| GOAL IV | 4 | GOAL V: (A) | 3 |
| GOAL VI | 3 | GOAL VI: (X) | 3 |
| Related Work/Minor | 3 | Related Work/Minor | 3 |
| | 16 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| SOCY Elective | 3 | SOCY 4155 | 4 |
| GOAL I: (W) | 3 | SOCY Elective | 3 |
| GOAL IV | 4 | Related Work/Minor | 3 |
| GOAL V: (L) | 3 | Related Work/Minor | 3 |
| Related Work/Minor | 3 | Elective | 3 |
| | 16 | | 16 |

### Senior Year

| | | | |
|---|---|---|---|
| SOCY 3156 | 4 | SOCY Elective | 3 |
| SOCY Elective | 3 | Elective | 3 |
| Related Work/Minor | 3 | Elective | 3 |
| Elective | 3 | Elective | 3 |
| Elective | 3 | Elective | 2 |
| | 16 | | 14 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73 - 77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

## ANTHROPOLOGY (ANTH)

### Courses for Undergraduates

(101) **ANTH 1101. Introduction to Anthropology. (3)** Biological and cultural evolution; archeology; language and culture; comparative study of human social institutions such as kinship, subsistence patterns, religion, politics; methods and theories. Prerequisite for all upper-level courses in anthropology. *(Fall, Spring, Summer) (Evenings)*

(210) **ANTH 2010. Topics in Ethnography. (3)** Prerequisite: ANTH 1101. Supervised investigation of ethnographic regions of the world. May be repeated for credit as the topics vary. Examples: Hunters and Gatherers, Plains Indians, People of Modern Greece, Peoples of The Mediterranean. *(Fall, Spring, Summer)*

(250) **ANTH 2050. Topics in Archeology. (3)** Prerequisite: ANTH 1101. Specialized topics in archeology. May be repeated for credit as topics vary. Examples: Historic Archeology, Old World Archeology. *(Yearly)*

(290) **ANTH 2090. Topics in Anthropology. (1-3)** Prerequisite: ANTH 1101. Specialized topics in anthropology. May be repeated for credit as topics vary. *(Yearly)*

(211) **ANTH 2111. Peoples of Africa. (3)** Prerequisite: ANTH 1101. Ethnic and linguistic diversity in Sub-Saharan Africa; ecology and culture; patterns of continuity and change in kinship, marriage, economy, social control, stratification, and religion. *(Yearly)*

(212) **ANTH 2112. North American Indians. (3)** Prerequisite: ANTH 1101 or consent of the instructor. Survey of the native peoples of America; culture at the time of European contact; major historical events and relationships; contemporary issues in Indian affairs. *(Yearly)*

(213) **ANTH 2113. Peasants and States. (3)** Prerequisite: ANTH 1101. Evolution of peasantry; social and cultural characteristics of past and present peasant societies; modernization, peasant revolts, and the position of peasants in the contemporary world economic system; analysis of selected peasant societies. *(On demand)*

(221) **ANTH 2121. Comparative Family Systems. (3)** Prerequisite: ANTH 1101. Cross-cultural survey of the origins and forms of the human family and interrelationships with other cultural institutions; role of the family in kinship, marriage, childrearing, sex roles, economics, political organization and religion. *(Yearly)*

(222) **ANTH 2122. Beliefs, Symbols and Rituals. (3)** Prerequisite: ANTH 1101. Structure and content of systems of belief and ritual; role in social life; analysis of religion, myth, magic, witchcraft, symbol systems, cult movements and religious change. *(On demand)*

(224) **ANTH 2124. Language and Culture. (3)** Prerequisite: ANTH 1101. Examination of language as part of culture; relationship between language and other cultural features; historical linguistics, phonetics and phonemics, componential analysis, dialects, kinesics and body language, situational analysis of language. *(On demand)*

(225) **ANTH 2125. Urban Anthropology. (3)** Prerequisite: ANTH 1101. Cross-cultural analysis of urban life; rise of early cities; rural-urban differences; migration; ethnicity, urban poverty; effects of urban life on kinship systems; modernization. *(On demand)*

(241) **ANTH 2141. Principles of Physical Anthropology. (4)** Evolutionary theory; primates; primate and human evolution; population genetics; human variation, nutrition, disease; osteology. *(Fall, Spring, Summer)*

(242) **ANTH 2142. Primate Behavior. (3)** Prerequisite: ANTH 1101. Primate evolution, taxonomy, ecology, social behavior, reproductive strategies; monkeys, apes and human beings; communication, aggression, mother-infant bonding, sociobiology; fieldwork, conservation. *(Yearly)*

(245) **ANTH 2145. Evolution of Human Sexual Behavior. (3)** Prerequisite: ANTH 1101. Sexual selection; reproductive strategies; parental investment; physiology; human evolution; gender differences; sexual practices cross-culturally; sociobiology. *(On demand)*

(251) **ANTH 2151. General Archeology. (3)** Prerequisite: ANTH 1101. Archeological method and theory; trends in human cultural development; important archeological sites and cultures from old and new worlds. *(Fall)*

(252) **ANTH 2152. New World Archeology. (3)** Prerequisite: ANTH 1101. Pre-history of North and South America; Paleoindians, Eastern United States, Southwest, Mexico; archeological methods and theory. *(Yearly)*

(301) **ANTH 3101. Foundations of Anthropological Theory. (3)** Prerequisites: ANTH 1101 and junior standing. History of anthropological theory; the anthropological perspective in the social sciences; examinations of current theoretical and methodological issues in anthropology. *(Fall)*

(311) **ANTH 3111. Culture Change and Applied Anthropology. (3)** Prerequisite: ANTH 1101. Cultural dynamics; agents and conditions promoting growth; application of anthropological theories and methods to domestic and foreign programs of sociocultural change. *(On demand)*

(322) **ANTH 3122. Culture, Health and Disease. (3)** Prerequisite: ANTH 1101 or consent of the Department. Relationship between cultural beliefs and practices and patterns of health and illness in human populations; role of disease in human evolution, ecology and epidemiology, nutrition, cultural systems of healing, roles of patient and healer, culture and emotional states, role of religion, and magic in healing. *(On demand)*

**ANTH 3140. Forensic Anthropology. (3)** Prerequisite: ANTH 1101. Related classical techniques of comparative human anatomy and physical anthropology to the modern problems in the identification of human remains. Surveys anthropological methods used to recover, recognize, interpret and identify human remains in paleontology, archeology, criminal and mass disaster investigations; includes field exercise in crime scene recovery coordinated with relevant county and city agencies. *(Yearly)*

(352) **ANTH 3152. Early Civilizations. (3)** Prerequisite: ANTH 1101. Great civilizations of Old and New Worlds; Mesopotamia, India, Greece, Africa, Egypt, China, Mexico, Peru; theories of cultural evolution; beginnings of complex societies; archeological theory and method, environment and ecology of first civilizations. *(Alternate years)*

(353) **ANTH 3453. Field Project in Archeology. (4)** Prerequisite: ANTH 1101. Examination of and practical experience in archeological techniques. With instructor's guidance and supervision, students will conduct field research on an historic or prehistoric archeological site. Research may include field reconnaissance, excavation, mapping, systematic description and analysis of cultural material, and/or other techniques appropriate to the site and research problem. May be repeated for credit as projects vary. Up to eight hours of credit may be applied toward the anthropology major. *(Presession)*

(480) **ANTH 3480. Internship in Anthropology. (3-6)** Prerequisite: consent of the Department. Research and/or in-service training experience in cooperating community organizations. Content of internship based upon a contractual agreement among the student, Department and community organization. Amount of credit determined by the nature and extent of the internship assignment. May be repeated for credit up to a maximum of six semester hours. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

(401) **ANTH 3601. Seminar in General Anthropology. (3)** Prerequisite: ANTH 3101 and senior standing. Synthesis and integration of subfields of anthropology with emphasis on individual research projects stressing orientation to the discipline, its uses and future. *(Spring)*

(495) **ANTH 3895. Directed Individual Study. (1-4)** Prerequisite: ANTH 1101 and consent of the Department. Supervised investigation of problems and areas in anthropology. May be repeated for credit. *(Fall, Spring, Summer)*

**Courses for Advanced Undergraduates and Graduates**

(690) **ANTH 4090. Topics in Anthropology. (1-3) (1-3G)** Prerequisite: ANTH 1101. Examination of specialized topics in anthropology. May be repeated for credit as topics vary. Examples: Human Ecological Systems, Women and Culture, Primitive Arts and Crafts.

(420) **ANTH 4120. Intercultural Communications. (3) (3G)** Prerequisite: ANTH 1101. Learning to cope with cultural differences; contrasting value systems; cross-cultural and communication styles; nonverbal communication; cultural relativity; ethnocentricism; culture and perception; cultural shock. *(On demand)*

(321) **ANTH 4121. Culture and Personality. (3) (3G)** Prerequisite: ANTH 1101 or consent of Department. Anthropological contributions to theories of personality formation; data on tribal and national characteristics, patterns of childrearing, culturally derived aspects of human behavior, deviancy and personal integration with the cultural milieu. *(Alternate years)*

## SOCIAL WORK (SOWK)

(280) **SOWK 2180. The Field of Social Work. (3)** Development and philosophy of social work as a profession; personal and societal needs; methods and organizational arrangements; roles and tasks of social workers. *(Fall, Spring) (Evenings)*

(281) **SOWK 2181. Human Behavior and the Social Environment. (3)** Interaction between the individual, family, community and larger social system; individual problem-solving; delivery of social services; impact of racism, sexism, poverty, ethnicity, and social class. *(Fall, Spring)*

(490) **SOWK 3090. Topics in Social Work. (1-3)** Specialized topics in social work. May be repeated for credit as topics vary. (A listing and brief description of specific courses offered each term is available from the departmental office.) *(On demand)*

(381) **SOWK 3181. Social Work Process. (3)** Prerequisite: SOWK 2180. Dynamics of the helping process; basic knowledge, value, skills and methods underlying the profession of social work. *(Fall, Spring)*

(382) **SOWK 3182. Social Work Methods. (3)** Prerequisite: SOWK 3181. Concepts, theories, principles and methods of intervention used in social work practice. *(Spring)*

(383) **SOWK 3183. Foundations of Social Welfare. (3)** Prerequisite: SOWK 2180. Foundations of social welfare; issues, processes, values and conflicts which influence social welfare programming. *(Fall, Spring)*

(384) **SOWK 3184. Transitional Stages Through Life: A Social Work Perspective. (3)** Prerequisite: SOWK 2180. Transitional and developmental patterns of the individual. *(Spring)*

(480) **SOWK 3280. Social Welfare Policy. (3)** Prerequisite: SOWK 2180. Nature and development of social welfare policy; implications of policy for program design and service delivery; role of the social worker in developing and implementing social welfare policies. *(Spring)*

(482) **SOWK 3482. Social Work Field Placement I. (6)** Prerequisites: SOWK 3182 and consent of the Department. Corequisite: SOWK 3683. Directed field experience under professional supervision in selected community agencies. Offered only on a *Pass/No Credit* basis. *(Fall, Spring)*

(484) **SOWK 3484. Social Work Field Placement II. (6)** Prerequisite: SOWK 3482. Corequisite: SOWK 3685. A continuation of SOWK 3482. Offered only on a *Pass/No Credit* basis. *(Fall, Spring)*

(483) **SOWK 3683. Social Work Field Placement Seminar I. (1)** Corequisite: SOWK 3482. Analysis and discussion of student field experience. *(Fall, Spring)*

(485) **SOWK 3685. Social Work Field Placement Seminar II. (1)** Corequisite: SOWK 3484. A continuation of SOWK 3683. *(Fall, Spring)*

(495) **SOWK 3895. Directed Individual Study. (1-4)** Prerequisite: consent of the Department. Supervised investigation of a special problem. May be repeated for credit. *(Fall, Spring)*

## SOCIOLOGY (SOCY)

**Courses for Undergraduates**

(151) **SOCY 1101. Introduction to Sociology. (3)** The sociological perspective and process; fundamental concepts, principles and procedures. *(Fall, Spring, Summer) (Evenings)*

(290) **SOCY 2090. Topics in Sociology. (1-3)** Prerequisite: SOCY 1101. Examination of specialized topics. May be repeated for credit as topics vary. *(On demand)*

(212) **SOCY 2112. Popular Culture. (3)** Analysis of popular forms of everyday life in America: fashions, fads, entertainment trends, advertising, television programming, music, myths, stereotypes and icons of mass-mediated culture. *(Fall, Spring)*

(232) **SOCY 2132. Marriage and the Family. (3)** Prerequisite: SOCY 1101. Cross-cultural examination of family; socialization and sex roles; love, dating, and mate selection; communication; sexuality; power and decision making; parenthood; childlessness; conflict and violence; divorce, remarriage and stepfamilies; alternate lifestyles; and future family. *(Fall, Spring, Summer) (Evenings)*

(271) **SOCY 2171. Social Problems. (3)** Prerequisite: SOCY 1101. Contemporary social problems and consequences for American society. *(Fall, Spring, Summer) (Evenings)*

(310) **SOCY 3110. American Minority Groups. (3)** Prerequisite: SOCY 1101. Relations between dominant and minority groups; the establishment, maintenance and decline of dominance involving racial, ethnic and religious minorities. *(Yearly)*

(325) **SOCY 3125. Urban Sociology. (3)** Prerequisite: SOCY 1101 or consent of Department. Cross-cultural analysis of urban development, organization, ecology, demographic composition, social psychological attributes and social problems. *(Yearly)*

(343) **SOCY 3143. Social Movements. (3)** Prerequisite: SOCY 1101. Analysis of collective behavior, ideology, development and organizations of movements seeking or resisting change. *(Yearly)*

(353) **SOCY 3153. Evolution of Sociological Theory. (3)** Prerequisite: SOCY 1101. Origins and evolution of fundamental sociological concepts and theories. *(Fall, Spring)*

(356) **SOCY 3156. Quantitative Analysis. (4)** Prerequisite: SOCY 4155 or consent of the Department. Concepts and procedures of sociological analysis; data processing; measurement theory; quantitative models of analysis. Three hours of lecture-discussion and two hours of laboratory each week. *(Fall, Spring)*

(362) **SOCY 3162. Social Control. (3)** Prerequisite: SOCY 1101. Relationship of social structure and social norms to conforming and deviant behavior; economic and political power, public opinion, law, ideology, political propoganda, organizational climate, and religion as types of social control. *(On demand)*

(473) **SOCY 3173. Criminology. (3)** Prerequisite: SOCY 1101. Nature and historical development of crime and political-economic organization of crime, criminal law, theories of crime causation. *(Yearly)*

(480) **SOCY 3480. Internship in Sociology. (3-6)** Prerequisite: consent of the Department. Research and/or in-service training for selected students in cooperating community organizations. Specified content based upon a contract between student, department and community organization. May be repeated for credit up to six semester hours. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

**Courses for Advanced Undergraduates and Graduate Students**

(490) **SOCY 4090. Topics in Sociology. (1-3) (1-3G)** Prerequisite: SOCY 1101. Examination of specialized sociological topics. May be repeated for credit. (A listing and brief description of specific courses offered each term is available from the departmental office.) Examples: corporate crime, collective behavior, divorce, family violence, mental health. *(On demand)*

(410) **SOCY 4110. Sociology of Aging. (3) (3G)** Prerequisite: SOCY 1101 or consent of Department. Changing characteristics, aspirations, and needs of older adults and their impact upon such institutions as the family, work, the economy, politics, education, and health care; emphasis on sociological theories of aging, contemporary research, and the analysis of specific aging policies and programs. Graduate students will be required to do additional reading and/or research and, if time permits, to present their materials to the other class members. *(Yearly)*

(311) **SOCY 4111. Social Inequality. (3) (3G)** Prerequisite: SOCY 1101. Distribution of power, privilege and prestige; correlates and consequences of inequality; national and international comparisons. *(Fall, Spring)*

(412) **SOCY 4112. Industrial Sociology. (3) (3G)** Prerequisite: SOCY 1101 or consent of Department. The emergence of industrialization; its technology and impact on work, community and family; problems and contemporary trends in selected industrial societies. Additional work will be required of all graduate students. *(Yearly)*

(315) **SOCY 4115. Complex Organizations. (3) (3G)** Prerequisite: SOCY 1101. Structure and dynamics of complex organizations; bureaucracy; mechanisms of change. *(Yearly)*

(322) **SOCY 4122. Population and Society. (3) (3G)** Prerequisite: SOCY 1101. International trends in population change, composition, distribution, fertility, mortality, migration; basic demographic measures and data sources for community analysis. *(Yearly)*

(324) **SOCY 4124. Sociology of the Community. (3) (3G)** Prerequisite: SOCY 1101. Concepts and methods of community analysis of planned and unplanned community change. *(Summer)*

**SOCY 4130. Sociology of Health and Illness. (3) (3G)** Prerequisite: SOCY 1101 or consent of Department. Impact of social factors on health and illness; health care occupations; organization and financing of health care; international comparisons; prospects for the future. Graduate students required to do additional readings and/or research. *(On demand)*

**SOCY 4132. Sociology of Sport. (3) (3G)** Prerequisite: SOCY 1101 or consent of Department. Dynamics and emergence of sport; reciprocal influence between sport and society; values, norms, and roles in sports. Additional work required by graduate students. *(Yearly)*

(435) **SOCY 4135. Sociology of Education. (3) (3G)** Prerequisite: SOCY 1101 or consent of the Department. Educational institution; the school class as a social system; the school as a social environment and a complex organization. *(Yearly)*

(354) **SOCY 4154. Theory Construction. (3) (3G)** Prerequisite: SOCY 3153 or consent of Department. Elements and process of theory construction; contemporary social theories. *(On demand)*

(355) **SOCY 4155. Sociological Research Methods. (4) (4G)** Prerequisite: SOCY 3153 or consent of Department. Formulation of research problems; research designs; social measurement; sampling; collection, analysis and interpretation of data. *(Fall, Spring)*

(361) **SOCY 4161. Socialization and Society. (3) (3G)** Prerequisite: SOCY 1101. Analysis and process of socialization, social interaction, sociocultural dimension of personality. *(Yearly)*

(463) **SOCY 4163. Sociology of Sex Roles. (3) (3G)** Prerequisite: SOCY 1101 or consent of the Department. Changing sex role behavior, socialization into sex roles, institutional sexism ; alternative sex role models. *(Fall, Spring, Summer) (Evenings)*

(372) **SOCY 4172. Sociology of Deviant Behavior. (3) (3G)** Prerequisite: SOCY 1101. An examination of the social processes producing unusual, bizarre and condemned behavior. *(Fall, Spring) (Evenings)*

(373) **SOCY 4173. Juvenile Delinquency. (3) (3G)** Prerequisite: SOCY 1101 or consent of Department. Youth crime and deviance; theories of causation; systems of control. *(Yearly)*

(461) **SOCY 4261. Human Sexuality. (3) (3G)** Prerequisite: SOCY 1101 or consent of Department. Human sexuality research; teenage pregnancy; birth control; sex education; sexual fantasy; pornography; homosexuality and bisexuality; sexual communication; heterosexual alternatives. *(Fall, Spring, Summer)*

(363) **SOCY 4263. Sociology of Small Groups. (3) (3G)** Prerequisite: SOCY 1101 or consent of Department. Systematic analysis and application of theoretical and empirical research pertaining to small groups. *(On demand)*

(420) **SOCY 4620. Seminar in the Sociology of Housing. (3) (3G)** Prerequisite: SOCY 1101 or consent of Department. Housing as a social and physical variable in relation to social problems; social policy, community development, social stratification, life cycle, racial-ethnic relations, individuals and neighborhoods, tenant-landlord relations and future alternatives. *(Alternate years)*

(534) **SOCY 4631. Seminar in Family Violence. (3) (3G)** Prerequisite: upper-division family-related course or consent of the Department. Family violence in the context of a changing society and family system. Principal foci: child abuse and wifebeating; related concerns include violence between siblings, violence by children toward the parental generation, and violence by wives against husbands. Investigation of these topics in terms of sociocultural influences and the internal dynamics of families. Additional work is required by graduate students. *(Yearly) (Evenings)*

(432) **SOCY 4632. Changing American Family. (3) (3G)** Prerequisites: SOCY 1101 and 2132, or consent of Department. Family theories; family system in relation to other social systems; integration of marital, parental and occupational roles in context of changing socioeconomic influences; traditional versus contemporary family roles; breakdown in stable family functioning. *(Yearly)*

456) **SOCY 4656. Seminar in Sociological Research. (3) (3G)** Prerequisite: completion of all other required core courses. Development, analysis, and presentation of independent research project. Review of other research projects. *(Spring)*

495) **SOCY 4895. Directed Individual Study. (1-4) (1-4G)** Prerequisite: consent of the Department. Supervised investigation of a special problem. May be repeated for credit. *(Fall, Spring, Summer)*

**Courses for Graduate Students and Advanced Undergraduates**

The following courses are designed primarily for graduate students, but may be taken by advanced undergraduates for undergraduate credit. See page 424 for complete course descriptions.

510) **SOCY 5110. Intergroup Relations. (3) (3G)**

525) **SOCY 5625. Seminar in Urban Sociology. (3) (3G)**

# Department of Visual Arts

*Chairperson:* Associate Professor Byrum
*Professor:* Anderson
*Associate Professors:* Bringle, Hill, Kampen, MacKillop, Strawn
*Assistant Professors:* Tite, Tweedy
*Lecturer:* Butckovitz

The Department of Visual Arts offers a diverse and comprehensive program leading to a Bachelor of Creative Arts degree, as well as teacher certification. The curriculum emphasizes painting, sculpture, photography, communication arts (graphic design and illustration), fibers, printmaking, ceramics, drawing, art history, and art education.

A concentration in studio art is available for students who are preparing for careers in fine arts, communication arts (graphic design and illustration), and design (ceramics and fibers). Members of the studio faculty are professional artists, active in one or more fields of specialization. A diversity of viewpoints and educational training among faculty members encourages students to investigate and appreciate many different forms of art expression.

The study of the history of art offers a visual key to understanding the evolution of civilization and the development of human creativity. As a discipline, art history encourages appreciation of individual works of art and instills a vivid awareness of the social and historical context in which these works were produced.

The Visual Arts program addresses the needs of students working to become exhibiting artists, art teachers or scholars generally educated in the arts. The program is structured upon the following premises:

1. an undergraduate program in the arts develops within its students the ability to identify artistic problems and to solve them;
2. one accumulates a wide range of data and moves toward varied experiences in response to a specific need or problem; and
3. a university program focused through the arts should lead its students to an awareness of the interrelatedness of all forms of knowledge and of the shared elements of the creative process, and should provide the opportunity to participate regularly and meaningfully in that creative process.

## BACHELOR OF CREATIVE ARTS (BCA)

**General Requirements for Visual Arts Majors.** All students majoring in art are required to enroll in courses that satisfy the six Goals of UNCC Education (see pages 73-77). Students enrolled prior to the establishment of this requirement, and qualified transfer students enrolling before spring Semester 1988, must take English 1101 and 1102 and at least 30 semester hours of credit as specified on page 214 of the 1985-87 *Catalog*.

**Requirements for the Major.** A major in Visual Arts leading to the BCA degree consists of 79 hours of art including 18 hours of the Visual Arts Core, two art history electives, Introduction to Individual Projects, Junior Individual Projects I & II, Senior Individual Projects I & II, Senior Seminar, Senior Exhibit, and 30 credit hours of art studio electives of which nine credit hours should be at the intermediate level.

**Visual Arts Core.** The Visual Arts Core develops the attitudes, conceptual awareness, creative methods, and technical skills basic to the visual arts through investigation of the perceptual, conceptual, and physical elements employed in the arts. In the first four semesters, students take Two-Dimensional Design, Three-Dimensional Design, Drawing I, Drawing II, Figure Study or Concepts in Form and Structure, and Introduction to Art History. Students must complete this 18 credit hour core program and Introduction to Individual Projects to be eligible for junior-level course work.

**Individual Projects.** Central to the BCA degree program in Visual Arts are the Individual Projects. With close faculty supervision, students devise projects to meet their own artistic and educational objectives. The purpose of Individual Projects is to assist students to be independent, creative

artists within a university context. A typical project requires students to create their own original, finished art. In addition to pursuing their own artistic development, students are encouraged to explore relationships between the arts and other fields of knowledge.

The project course block begins in the junior year, after the Visual Arts Core and Introduction to Individual Project is completed, and continues through the senior year. Students prepare project proposals with faculty guidance, work according to a schedule they set themselves during the semester, and submit work for evaluation at the end. Individual Projects provide a realistic setting for students to explore personal directions in the arts and to cultivate a variety of independent problem-solving skills. The project course block consists of ARTS 3601, 3602, 3691, and 3692.

**Transfer Student Review Procedures to Waive ARTS 3602.** Transfer students who have completed a minimum of 60 credit hours which includes equivalent of the 18 credit hour Visual Arts Core and 6 credit hours of introductory studio media courses may request from the Chairperson a faculty review for the purpose of waiving ARTS 3602. The student must successfully complete Introduction to Individual Projects and ARTS 3601 Junior Individual Project to be eligible to request the review to waive ARTS 3602.

**Advisory System.** Visual Arts students are assigned an academic adviser from the Department. In addition to meetings required for pre-registration, the student may ask the adviser for any art program information.

Students may also seek advice from their individual project instructor. Each student meets weekly with the project instructor for the purpose of reviewing and discussing individual project course work.

**Teacher Certification.** The Department offers courses for students seeking art education certification and teacher certification. Students planning to specialize in art education should apply through the Coordinator for Art Education during the first semester of the sophomore year. A later decision to seek Art education certification may result in delayed graduation from the 135 credit hour program. Students majoring in education in the College of Education and Allied Professions should consult their advisers for a list of recommended visual arts courses for teaching certification.

## HONORS PROGRAM IN VISUAL ARTS

An honors program in Visual Arts is offered primarily for students majoring in Visual Arts and is based on individual honors projects.

*Admission.* Students must have completed a number of course prerequisites and at least 60 semester hours of course work and have an overall GPA of 3.0 and a 3.5 in Visual Arts course work. Additionally, students must be recommended by the Department Honors Committee to participate in the program.

*Courses.* The courses offered are "Individual Project, Honors" at both the junior and senior levels, and Senior Seminar.

*Certification Requirements.* A student must complete 21 hours of honors individual projects, with at least nine hours of work at the senior individual level and achieve an overall GPA of 3.5 in all honors course work completed in the Department.

## CURRICULUM OUTLINE
## FOR THE VISUAL ARTS MAJOR
## LEADING TO THE BCA DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| ARTS 1201 Two-Dimensional Design | 3 | ARTS 1202 Three-Dimensional Design | 3 |
| ARTS 1203 Drawing I | 3 | ARTS 1204 Drawing II | 3 |
| ARTS 1102 Introduction to Art History | 3 | ARTS xxxx Art History Elective | 3 |
| GOAL I: English 1101 | 3 | GOAL I: English 1102 | 3 |
| GOAL I: Foreign Language Proficiency | 4 | GOAL I: Foreign Language Proficiency | 4 |
| | 16 | | 16 |

### Sophomore Year

| | | | |
|---|---|---|---|
| ARTS 1205 Figure Study | 3 | ARTS xxxx Intro. to Indiv. Projects | 3 |
| ARTS xxxx Art Studio Elective | 3 | ARTS xxxx Art History Elective | 3 |
| ARTS xxxx Art Studio Elective | 3 | ARTS xxxx Art Studio Elective | 3 |
| GOAL II: Mathematics | 3 | GOAL II | 3 |
| GOAL IV | 4 | GOAL IV | 4 |
| | 16 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| ARTS 3601 Junior Indiv. Proj. I | 3 | ARTS 3602 Junior Indiv. Proj. II | 3 |
| ARTS xxxx Art Studio Elective | 3 | ARTS xxxx Art Studio Elective | 3 |
| ARTS xxxx Art Studio Elective | 3 | ARTS xxxx Art Studio Elective | 3 |
| GOAL V | 3 | GOAL I: (W) | 3 |
| GOAL III | 3 | GOAL VI | 3 |
| | 15 | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| ARTS 3691 Senior Indiv. Proj. I | 6 | ARTS 3692 Senior Indiv. Proj. II | 6 |
| ARTS xxxx Art Studio Elective | 3 | ARTS xxxx Art Studio Elective | 3 |
| ARTS xxxx Art Studio Elective | 3 | ARTS xxxx Senior Seminar | 3 |
| GOAL VI | 3 | ARTS xxxx Senior Exhibit | 1 |
| | 15 | | 13 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## VISUAL ARTS (ARTS)

(170) **ARTS 1101. Art Appreciation. (3)** Introduction to the appreciation of art through slide lectures concerning a brief chronological history of art, the elements of design, and general concepts of art. For non-majors and majors without prior art training. *(Fall, Spring, Summer)*

(270) **ARTS 1102. Introduction to Art History. (3)** History of art from its origins in paleolithic cave painting to the present day. Identification of major art works and style movements. Emphasis on the history of the visual arts and related cultural events. *(Fall, Spring, Summer)*

(271) **ARTS 1104. Issues in the Arts. (3)** An examination, discussion and study of major issues in the arts with special emphasis on issues that face the artist in our contemporary society, with slides and topical discussions. *(On demand)*

(272) **ARTS 1105. Comparative Art: Western/Non-Western. (3)** Comparison of art theory and aesthetics in Western and non-Western culture, with slides and topical discussions. *(Spring)*

(273) **ARTS 1106. Comparative Art: European Art Through the 19th Century. (3)** Comparison of art theory and aesthetics in European Art through the 19th century, with slides and topical discussions. *(Spring)*

(274) **ARTS 1107. Comparative Art: 20th Century Art, American and European. (3)** Comparison of art theory and aesthetics in 20th-century art, American and European, with slides and topical discussions. *(Fall)*

(171) **ARTS 1201. Two-Dimensional Design. (3)** Emphasis on the two-dimensional surface and its structural possibilities (i.e., graphics, photography, painting); elements of plastic expression related to increased complexity of space and form. Priority for majors only. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

(172) **ARTS 1202. Three-Dimensional Design. (3)** Exploration of materials, tools, and methodology as they relate to form and space in three dimension. Priority for majors. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

(175) **ARTS 1203. Drawing I. (3)** Introduction to drawing involving skills and theory including perspective, proportion, and rendering in a variety of media and techniques. Priority for majors. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring, Summer)*

(173) **ARTS 1204. Drawing II. (3)** Drawing media including graphite, ink, brush, light sensitive, electrical-mechanical and embossing techniques. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

(174) **ARTS 1205. Figure Study. (3)** A course utilizing the figure as it relates to form, contour and movement; an anatomical study emphasizing the relationships of skeletal and muscle organization and other referents in the development of graphic skills and vocabulary. Three lecture hours, three lab hours. Majors may repeat for a total of six hours credit. Lab fee. *(Fall, Spring)*

(176) **ARTS 1206. Concepts in Form and Structure. (3)** A combination theory and methods course designed to explore natural forms as they relate to the third dimension; developed from analysis of objects conditioned by perceptual attitudes. Three lecture hours, three lab hours. Lab fee. *(On demand)*

(276) **ARTS 2170. Visual Arts Education: Early and Middle Years. (3)** Emphasis on the creative growth potential of children at the elementary level; perceptual development and learning objectives; past and current philosophies, psychology and methods in art education; individual studio problems involving art elements, principles and media. *(Fall)*

(277) **ARTS 2171. Foundations of Art Education. (3)** The development of objectives for art education based on personal and historical references, philosophy and psychology. A critical examination of traditional and contemporary bases. *(Fall)*

(178A) **ARTS 2215. Ceramics/Handbuilding. (3)** A skills course introducing methods of forming clay, glaze composition and low-temperature firing procedures. Six contact hours. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

(178B) **ARTS 2216. Ceramics/Wheel. (3)** Introduction to wheel forming techniques and concepts involving skill development, glaze formation and basic high-fire techniques. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

(179) **ARTS 2220. Introduction to Fiber. (3)** An introduction to the use of non-loom weaving techniques. Emphasis will be placed on the structure and the further application of the techniques. Course may include frame weaving, basketry, cardweaving, spinning and felting. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

(177) **ARTS 2221. Batik. (3)** Understanding the historical rudiments of designing on fabrics, using reverse or resist techniques; artistic and sociological implications of the revival of this ancient art/craft; exploration of contemporary design and techniques as a medium of visual expression. Three lecture hours, three lab hours. Lab fee. *(On demand)*

(180) **ARTS 2225. Metalsmithing/Jewelry I. (3)** An introduction to basic design problems in metalsmithing, with an emphasis on the development of mechanical skills, piercing, cold joining, soldering, forming and finishing processes of non-ferrous metals. Includes a brief survey of contemporary trends in metalsmithing. Three lecture hours, three lab hours. Lab fee. *(On demand)*

(285) **ARTS 2226. Casting/Jewelry. (3)** Casting and construction for jewelry. Course includes a survey of contemporary jewelry design. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(On demand)*

(182) **ARTS 2230. Introduction to Painting. (3)** Basic theory and technique of easel painting in oils from preparation of the painting support through final framing. Basic experience in drawing helpful. Three lecture hours, three lab hours. Lab fee. *(Fall)*

(187) **ARTS 2231. Watercolor/Mixed Media. (3)** Fundamentals of watercolor and related mixed media with emphasis on developing aesthetic understandings, skills in handling painting media and exploration of varied approaches to pictorial solutions. Individual experimentation and expression. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Spring)*

(183) **ARTS 2235. Photography I. (3)** Fundamental principles, processes and aesthetics of photography. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

(289) **ARTS 2240. Printmaking: Lithography. (3)** A survey of technical hand printing approaches to stone and plate lithography. May be repeated for credit.Three lecture hours, three lab hours. Lab fee. *(Spring) (Alternate years)*

(290) **ARTS 2241. Printmaking: Etching. (3)** A survey of etching, equating, engraving, drypoint and sculptural techniques in intaglio print medium. Printing in mono-tone and multi-color approaches are required. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Fall)*

(291) **ARTS 2242. Printmaking: Silk Screen. (3)** A survey of tusche and glue, cut film, glue negative, photographic image and mixed techniques in screen printing. Problems of personal imagery stressed. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Spring) (Alternate years)*

(292) **ARTS 2243. Printmaking: Woodcut. (3)** A survey of approaches to relief media: wood, metal, plastic, linoleum and plaster. Image development is stressed along with the unique qualities of this medium. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Fall)*

(186) **ARTS 2245. Introduction to Sculpture. (3)** A beginning studio course designed to introduce three-dimensional forms and concepts with an emphasis on methods and materials. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

(275) **ARTS 2680. Issues in Modern Painting. (3)** Seminar with assigned reading, slides, exhibition visits. Two major papers or studio projects. *(On demand)*

(305) **ARTS 3001. Topics in Art. (1-3)** Special topics in arts. May be repeated for credit with change in topic. *(On demand)*

(278) **ARTS 3170. Art Education Methods I (K-12). (3)** Prerequisite: ARTS 2171. Analysis of learning theories as related to growth and development in visual arts; organization of tools, media and materials; curriculum design in planning art units and lesson plans; evaluation and motivation techniques. *(Fall)*

(279) **ARTS 3171. Art Education Methods II (K-12). (3)** Prerequisite: ARTS 2171. The school structure—local, state and national economic and political considerations; the relationship of the arts and artists to contemporary society; issues and research in art education; classroom management; school exhibition. Three contact hours plus school visits. *(Spring)*

(295) **ARTS 3172. Aesthetic Education in the Schools. (3)** Prerequisite: consent of instructor. Focus will be upon assisting classroom and art teachers in developing techniques for dealing with aesthetic experiences and the creative process as tools for learning. Emphasis will be placed upon productive analysis of the dimensions of natural and created art forms (visual arts, dance/movement, music and drama), consideration of their qualities and making value judgments. *CEMREL Aesthetic Education* materials dealing with aesthetics of the physical world, arts elements, creative process, artists, environment and the culture will be utilized. May be repeated for credit. *(Spring)*

(280) **ARTS 3175. Intermediate Ceramics. (3)** Prerequisite: ARTS 2215 or 2216 or consent of the instructor. Emphasis on exploration and development of individual concepts and relevant technical concerns beyond ARTS 2215 and 2216. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Spring)*

(281) **ARTS 3220. Intermediate Fibers. (3)** Prerequisite: ARTS 2220 or consent of instructor. Introduction to the loom, procedures for warping, basic technique including drafting, patterns and color problems; emphasis on technique and structure. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Spring) (Alternate years)*

(282) **ARTS 3221. Rug Weaving. (3)** Prerequisite: ARTS 3220. A technical study including warp-faced and weft-faced rugs, pile, and flat woven surfaces. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Fall)*

(283) **ARTS 3222. Tapestry. (3)** Prerequisite: ARTS 3220 or consent of instructor. Tapestry techniques concentrating on color and design. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Spring) (Alternate years)*

(181) **ARTS 3225. Metalsmithing/Jewelry II. (3)** Prerequisite: ARTS 2225. Fabrication of two and three dimensional forms; introduction to additional techniques in raising, forming, forging and surface embellishment. Emphasis on the exploration of design concepts. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(On demand)*

(286) **ARTS 3230. Intermediate Painting. (3)** Prerequisite: ARTS 2230 or consent of instructor. Problems of composition, color, space and surface as applied to both abstract and figurative modes of expression. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

(184) **ARTS 3235. Photography II. (3)** Prerequisite: ARTS 2235 or consent of instructor. Intermediate techniques in photography; exposure, development of printing. Emphasis is given to relationship of picture aesthetic and printing techniques. May be repeated for credit with permission of instructor. Three lecture hours, three lab hours. Lab fee. *(Fall, Spring)*

(287) **ARTS 3236. Alternative Photographic Media. (3)** Alternative silver and non-silver photographic media and aesthetics. Experimental studies in the personal and imaginative use of photographic materials. Emphasis on antiquated and recent photographic materials and approaches. Three lecture hours, three lab hours. Lab fee. *(On demand)*

(288) **ARTS 3237. Color Photography. (3)** Prerequisite: ARTS 3235 or consent of instructor. Introduction to photographic color theory and color aesthetics. Studio work limited to the color slide medium. Three lecture hours, three lab hours. Lab fee. *(On demand)*

(294) **ARTS 3240. Intermediate Printmaking Studio. (3)** Prerequisite: one of the following—ARTS 2240, 2241, 2242 or 2243. Development of intermediate skills in any or combined graphic techniques (etching, woodcut, lithography, silk screen, collography, drawing or collage). Special emphasis on color printing and artistic themes. May be repeated for credit. Three lecture hours, three lab hours. Lab fee. *(On demand)*

(239A) **ARTS 3245. Intermediate Sculpture. (3)** Prerequisite: ARTS 2245 or consent of instructor. Media involve plaster, wax, clay, plastic and metal with the utilization of various mold-making and casting techniques. May be repeated for credit. Three lecture hours, and three lab hours. Lab fee. *(Spring)*

(296) **ARTS 3250. Visual Communication and Design I. (3)** Prerequisite: ARTS 1201 or consent of instructor. Development of creative solutions in graphic and communication design with emphasis on exploring the equipment, materials, techniques, and procedures for graphic indication, layout, and comprehensive layouts. Three lecture hours, three lab hours. Lab fee. *(Fall)*

(297) **ARTS 3251. Visual Communication and Design II. (3)** Prerequisite: ARTS 3250 or consent of instructor. Individual solutions to more complex and integrated design problems including graphic photography, finished comprehensive layouts, concept and theme development. Three lecture hours, three lab hours. Lab fee. *(Spring)*

(298) **ARTS 3479. Student Teaching in Visual Arts. (12)** Prerequisite: senior standing in the Teacher Certification track of the BCA degree program. A 14-week practicum in the teaching of visual arts at the elementary and secondary levels. Substitutes for ARTS 3692. Weekly seminar. Three lecture hours, 40 lab hours. *(Fall, Spring)*

(301) **ARTS 3601. Junior Individual Project I. (3)** Prerequisite: ARTS 2601. Majors only. Lab fee. *(Fall, Spring, Summer)*

(302) **ARTS 3602. Junior Individual Project II. (3)** Prerequisite: ARTS 3601. Majors only. Lab fee. *(Fall, Spring, Summer)*

(401) **ARTS 3691. Senior Individual Project II. (6)** Prerequisite: ARTS 3602. Majors only. Three contact hours. Lab fee. *(Fall, Spring, Summer)*

(402) **ARTS 3692. Senior Individual Project II. (6)** Prerequisite: ARTS 3691. Majors only. Three contact hours. Lab fee. *(Fall, Spring, Summer)*

# American Studies

*Coordinator:* Associate Professor Haber

American Studies is an interdisciplinary program designed to develop in-depth knowledge of American society, past and present. Drawing its curriculum from approved classes in other departments and its own core courses, the program weaves traditionally divergent disciplines together so that students gain a broad understanding of American life and culture. The American Studies program is open to students of all majors. Students may complete the program by fulfilling requirements for the emphasis or the minor.

## EMPHASIS IN AMERICAN STUDIES

Students selecting the emphasis must complete 27 semester hours consisting of AMST 3100 and 3800, and 21 semester hours of American Studies or American-content courses offered by other departments. Students may find that some courses meet the requirements for both their major and the emphasis; however, a maximum of 12 hours of approved American-content courses from their major may be counted as part of the emphasis. All students must meet with the Coordinator prior to their senior year to outline the direction of their program and the nature of their independent study (AMST 3800). They also must have a grade point average of at least 2.0 in classes applied toward the emphasis.

## AMERICAN STUDIES MINOR

A minor in American Studies consists of 18 semester hours: AMST 3100 and 3800, and 12 semester hours of American Studies courses or approved American-content courses from other departments. A maximum of six of these hours may be in the student's major. All students must have a grade point average of at least 2.0 in courses applied to the minor.

## COURSES APPROVED FOR THE EMPHASIS AND MINOR

The following courses have been approved for the American Studies emphasis and minor. Because additions and deletions are made to correspond to current University offerings, students are advised to consult with the Coordinator. Other classes that do not appear on the list, especially topics and independent study courses, may be approved if they are pertinent to the student's program and deal with an American topic.

English: 2104, 3141, 3142, 3143, 3144, 3145, 3147, 3148, 3149, 3155, 4141, 4145

History: 1160, 1161, 3179, 3185, 3201, 3202, 3211, 3212, 3213, 3241, 3242, 3251, 3252, 3256, 3259, 3261, 3281, 3285, 3288, 3290, 3295, 3296, 4610

Economics: 1101, 2101, 2102, 3170

Afro-American and African Studies: 1101, 1102, 2203, 2204

Philosophy: 3217*

Religious Studies: 2108, 3137

Criminal Justice: 3102, 3110, 3120, 3140, 3141, 3150, 3151, 3400

Geography: 2155*, 2160, 3100, 3105

Earth Science: 3150*

Political Science: 1100*, 3101, 3103, 3105, 3109, 3111, 3112, 3113, 3114, 3115, 3116, 3117, 3118, 3119, 3120, 3121, 3122, 3133, 3157

Sociology: 2112, 2132, 2171, 3110, 3125, 3480, 4124, 4163, 4632

**Courses with an asterisk are especially recommended for American Studies students.*

## AMERICAN STUDIES (AMST)

(350) **AMST 3000. Topics in American Studies. (3)** Introduction to the interdisciplinary approach, demonstrating how traditionally distinct disciplines, such as literature and history, or art and political science, interrelate and contribute to an understanding of an American topic. May be repeated for credit with permission of the student's adviser. (Not limited to American Studies students. Can be counted as a humanities course for general education requirements.) *(Yearly)*

(301) **AMST 3100. Introduction to American Studies. (3)** Introduction to American culture through an in-depth study of a single decade or era, such as the 1830s, 1890s, 1920s, 1950s or 1960s. Focus is on how diverse social, economic, artistic, literary, philosophical and political forces have shaped American society. Students examine the complex and multifaceted nature of American culture, both as it pertains to the specific era under study and to the present day. (Not limited to American Studies students. Can be counted as a humanities course for general education requirements or for fulfilling GOAL V or VI.) *(Fall, Spring)*

(303) **AMST 3800. Independent Study or Directed Reading in American Studies. (3)** May be repeated once for credit, with permission of the student's adviser. (Not limited to American Studies students but should be under the supervision of an American Studies adviser or designee. Can be counted as a humanities course for general education requirements.) *(On demand)*

# Communication Studies

*Coordinator:* Assistant Professor Hill
*Assistant Professors:* Bokeno, Gaber, Scodari
*Lecturer:* Ross

The Communication Studies program offers training in the practice and theory of communication across a variety of contexts. Among these are public communication, organizational communication, interpersonal communication, small group communication, public relations and mass communication. In addition, students examine specific types of communication such as argumentation, debate and persuasion.

The Communication Studies program offers a minor in five designated tracks of study: Communication Theory and Process, Mass Media, Organizational Communication, Public Address, and Public Relations. Students select the specific track(s) of study that best complements their academic major and professional goals.

## COMMUNICATION STUDIES MINOR

The minor in Communication Studies consists of 21 semester hours, which must include: two core courses, COMM 1101 Introductory Speech and COMM 1107 Introduction to Communication Contexts; a required course within the track of study; and an additional 12 semester hours to be selected from a list of approved courses. Additional electives are possible with prior approval of the Communication Studies Coordinator. COMM 3050 Topics in Communication Studies and/or COMM 3880 Independent Study may be included as part of the 12 hours of electives with prior approval of the Coordinator, although these courses may not be substituted for a required course. Students must attain an overall GPA of 2.5 in all course work within the minor. In addition, students must fulfill general education requirements and requirements for their major.

## TRACKS WITHIN THE MINOR

**Communication Theory and Process** is a track of study designed for students to obtain a broad theoretical understanding of the human communication process. It is especially beneficial for students planning to pursue advanced study in the field of communication. In addition to COMM 1101 and 1107, each student must take COMM 3107, and 12 hours of electives selected from: COMM 2107, 3101, 3120, 3141, 3145; ENGL 4165; and ANTH 4120.

**Mass Media** is a track of study designed for students anticipating media-related careers. In addition to COMM 1101 and 1107, each student must take COMM 3120, and 12 hours of electives selected from: COMM 2491 (limit three hours), COMM 3101, 3121; POLS 3104; ENGL 2118; EDUC 5000T or 5000V; and ARSC 3400 (limit three hours). (Prior approval by the Coordinator is required for ARSC 3400.)

**Organizational Communication** is a track of study designed for students anticipating careers involving communication in organizational settings. In addition to COMM 1101 and 1107, each student must take COMM 3141, and 12 hours of electives selected from: COMM 2105, 2107; SOCY 4165; ENGL 2116; BUSN 3160; and PSYC 2171.

**Public Address** is a track of study designed for those students seeking a well-developed background in the general theory and practice of public communication. In addition to COMM 1101 and 1107, each student must take COMM 2101 and 12 hours of electives selected from: COMM 2103, 3101, 3403 (limit four hours) and EDUC 5000V.

**Public Relations** is a track of study designed for students anticipating careers in the public relations context. The track emphasizes understanding the theory and practice of the role of public relations in society. In addition to COMM 1101 and 1107, each student must take COMM 3145, and 12 hours of electives selected from: COMM 2101, 3101; ENGL 2116, 2160; POLS 3103; EDUC 5000V; and ARSC 3400 (limit three hours). (Prior approval by the Coordinator is required for ARSC 3400.)

## COURSE DESCRIPTIONS

### COMMUNICATION STUDIES (COMM)

(101) **COMM 1101. Introductory Speech. (3)** For students who want to upgrade their oral communication skills. Opportunity to study theory and practice of public speaking. Special emphasis placed on constructing and delivering speeches. *(Fall, Spring, Summer) (Evenings)*

**COMM 1107. Introduction to Communication Contexts. (3)** A survey of the nature and practice of communication in interpersonal, small group, organizational, public relations, and mass communication contexts. *(Fall, Spring)*

(201) **COMM 2101. Advanced Public Speaking. (3)** Prerequisite: COMM 1101 or permission of the instructor. Advanced theory and practice of speaking in public. Research, composition, and delivery of various types of speeches and presentations. *(Fall, Spring)*

(203) **COMM 2103. Argumentation and Debate. (3)** Introduction to the basic theory and skills of argumentation and debate. Discussion of assumptions of argumentation, evidence, reasoning, argument construction, cross-examination, refutation and ethics included. *(Fall)*

(205) **COMM 2105. Small Group Communication. (3)** Principles of discussion and deliberation in small groups. Practice in organizing, leading and participating in various forms of group communication. Emphasis on problem solving and leadership skills. *(Spring)*

**COMM 2107. Interpersonal Communication. (3)** Prerequisite: COMM 1101. Study of the dynamics of one-to-one human communication. The relation of language to human communication, perception and reality, self-concept, nonverbal communication codes, development of trust and self-disclosure, and development of positive communication style. *(Fall, Spring)*

(291) **COMM 2491. WFAE Radio Practicum. (2-3)** Prerequisites: COMM 1101 or equivalent and permission of station manager. On-the-air announcing, board operations, and production work at public radio station WFAE. *Pass/No Credit* grading only. No more than three hours of COMM 2491 may be used toward requirements for the minor. Credit given only for work done while student is registered for the course. *(Fall, Spring, Summer)*

**COMM 3050. Topics in Communication Studies. (3)** Prerequisite: COMM 1101. Timely and important areas relevant to communication studies. May be repeated for credit with permission of the Coordinator. *(On demand)*

(301) **COMM 3101. Persuasion. (3)** Prerequisite: COMM 1101. Emphasis on the theory and practice of persuasion. Topics include attitude modification, attitude formation, source credibility, persuasive strategies, ethics and audience analysis. *(Spring)*

**COMM 3107. Communication Theory. (3)** Prerequisite: COMM 2107. Examines traditional and contemporary theories about human communication processes and the assumptions underlying each theory. *(Fall)*

**COMM 3120. Communication and Mass Media. (3)** A survey of the function and history of print and electronic media as forms of communication, their influence upon society, and the legal and economic environments in which they operate. *(Fall)*

**COMM 3141. Organizational Communication. (3)** Prerequisites: COMM 1101 and 1107. Examines the importance of the operation of communication processes within organizations and between organizations and their environments. *(Fall)*

**COMM 3145. Communication and Public Relations. (3)** Prerequisites: COMM 1101 and 1107. Examines the role of communication in the field of public relations. Special emphasis given to the relationships between communication and the functions of public relations. *(Spring)*

(303) **COMM 3403. Debate Practicum. (2)** Prerequisites: COMM 2103 or equivalent and permission of instructor. Application of debate principles and practices as a member of UNCC Debate Team. Research, argument construction and tournament competition required. Can be repeated four times. No more than four hours of COMM 3403, however, may be used toward requirements for the minor. *(Fall, Spring)*

(380) **COMM 3880. Independent Study. (1-3)** Prerequisites: COMM 1101, permission of instructor, Coordinator, and English Department Chair. Area of study beyond the scope of current offerings to be devised by student and faculty member. May be repeated. Three hours of COMM 3880 may be used toward the minor with prior approval of the Coordinator. *(Fall, Spring, Summer)*

# Gerontology

*Coordinator:* Assistant Professor Day

The interdisciplinary minor in Gerontology is designed to provide students with academic and field experiences in the area of aging. An understanding of the basic processes of aging and of its social consequences is valuable not only for students who wish to pursue careers directly related to gerontology but also for students interested in traditional careers in other areas. As the number of older persons in our society continues to increase, it will be important for people in every occupation and profession to have a basic understanding of the aging process. The goal of the program is to provide students with that basic understanding.

Gerontology has traditionally been recognized as a multidisciplinary field. Invariably, the best research, training, and service programs in gerontology have developed when professionals from a variety of traditional academic disciplines have been afforded the opportunity to work together, each contributing a unique expertise while benefiting from the expertise of others. The minor in gerontology is built around a core sequence of interdisciplinary courses that are team-taught by professionals form a variety of different academic disciplines. This approach is designed to bring together information from multidisciplinary sources, integrate theoretical and applied concepts in gerontology, and communicate to students the need for a multidisciplinary approach in meeting the needs of older persons.

## GERONTOLOGY MINOR

The minor in gerontology is awarded only to students completing an undergraduate major through an existing academic unit at UNCC. A total of 22 hours in gerontology courses with an overall GPA of 2.5 in those courses is required. Three interdisciplinary, team-taught courses form the core of the gerontology sequence and are required for all students completing the minor, as are courses in the Psychology of Aging (PSYC 3124) and the Sociology of Aging (SOCY 4110). Students must also complete six hours of approved elective courses related to gerontology.

The following courses have been approved as elective courses related to gerontology. (Additional elective courses now being developed will be approved as they become available.)

HUSV 3102 The Adult Years (3)
PHIL 3201 or RELS 3201 The Meaning of Death (3)
PHIL 3228 Biomedical Ethics (3)
PSYC 3001B International Perspectives on Aging (3)
SOWK 3090 Clinical Social Work with the Elderly (3)
ENGL 3050A Aging in Literature (3)
GRNT 3100 Health and the Aging Process (3)

In addition, any *one* of the following may be applied toward the six-hour requirement:

EDUC 2150 Human Development Across the Life Span (3)
HUSV 1100 Exploration of Human Development (3)
NURS 1100 Growth and Development (3)
SOWK 3184 Transitional Stages through Life (3)

## COURSE DESCRIPTIONS

### GERONTOLOGY (GRNT)

**GRNT 2100. Introduction to Gerontology. (3)** An interdisciplinary team-taught course that examines the phenomenon of aging and its consequences for society from a variety of perspectives. Students participate in lectures, discussions and meetings with community-based professionals designed to give them a broad overview of the field of gerontology. Emphasis on the wide variation in the aging process and the significant programs and services designed to meet the needs of the aging population. *(Yearly)*

**GRNT 3100. Health and the Aging Process. (3)** Prerequisite: GRNT 2100. A team-taught course that examines the physiologic processes of aging as a normal life experience. Study of psychological, nutritional and general health issues designed to facilitate high-level wellness. *(Yearly)*

**GRNT 3600. Senior Seminar and Field Experience in Aging. (4)** Prerequisites: completion of 15 hours in Gerontology curriculum including GRNT 2100, GRNT 3100, PSYC 3124 and SOCY 4110. Capstone course for the concentration in Gerontology designed to help students apply theories, research methods, and specific intervention strategies to subtantive issues, and critically examine the organizational structure of aging programs and policies. Two seminar hours and six field placement hours per week. *(On demand)*

**PSYC 3124. Psychology of Adult Development and Aging. (3)** Prerequisites: PSYC 2120 or PSYC 2121, or equivalent. Psychological development through adulthood and old age. Emphasis on processes underlying continuity and change in adulthood, including personality and socialization, cognitive development and the psychophysiology of aging. *(Yearly)*

**SOCY 4110. Sociology of Aging. (3)** Prerequisite: SOCY 1101 or consent of the instructor. Changing characteristics, aspirations and needs of older adults and their impact upon such institutions as the family, work, the economy, politics, education and health care; emphasis on sociological theories of aging, contemporary research, and the analysis of specific aging policies and programs. *(Fall, Summer) (Evenings)*

# Interdisciplinary Honors Program

*Coordinator:* To be named

The Interdisciplinary Honors Program was established to provide exceptional academic and interpersonal experiences for talented students and to provide a unique social and intellectual milieu for both students and faculty. The program has a rigorous but flexible academic framework which permits honors students to develop their intellectual and creative faculties to their fullest extent.

The program offers freshman and upper-level interdisciplinary honors courses. The Freshman Interdisciplinary Honors Seminar is a two-semester course sequence team-taught by faculty members from different disciplines on a given theme or topic. Enrollment is limited to 15 students. Additionally, upper-level special topics courses and an Interdisciplinary Forum are offered. Students may take courses in the Interdisciplinary Honors Program without completing the requirements for certification. Students who take an occasional course or just the freshman seminars will have this noted on the transcript. Students who complete the requirements to graduate with Interdisciplinary Honors will have this honor inscribed on their diploma, announced at graduation and permanently recorded on their transcript.

Participants in the Interdisciplinary Honors Program have access to a student lounge and receive invitations to participate in many special activities such as luncheons with Chancellor Fretwell and local business and media figures as well as trips to Spirit Square, the Charlotte Opera and Symphony, and Discovery Place.

**Admission.** The Interdisciplinary Honors Program is open to students from all colleges and academic majors. Participation in the program may be student-initiated or a student may be invited to participate by the Interdisciplinary Honors Committee. High school seniors admitted to UNCC are invited to participate based on high school performance and SAT scores. Other students who achieve a GPA of 3.5 or greater will generally be asked to participate in the program. Transfer students and other students not contacted may become involved in the program with the approval of the Interdisciplinary Honors Program Coordinator.

## GRADUATION WITH INTERDISCIPLINARY HONORS

To graduate with Interdisciplinary Honors, students must be recommended by the Interdisciplinary Honors Committee and fulfill three major requirements:

1. Complete 15 hours of honors courses across three or more disciplines, including at least three hours of Interdisciplinary Honors course work (HONR) other than thesis. A single program of study, might, for example, include six hours of Interdisciplinary Honors credit through Interdisciplinary Seminars, and three credits each in honors courses in English, psychology, and mathematics. Other departments that offer honors courses open to nonmajors include History, Political Science and Sociology.

2. Complete a thesis approved by the Interdisciplinary Honors Committee. The thesis must result from enrollment in at least three hours of independent honors research. The thesis may be in any academic area and may be directed by any faculty member at UNCC.

3. Achieve an overall GPA of 3.0 and a 3.5 GPA in honors work for which a letter grade was assigned. At least three credits of thesis work must be completed with the grade of *A*.

**Completion of Interdisciplinary and Department Programs.** Students may complete both the Interdisciplinary Honors Program and a department honors program. If a student elects this option, the Interdisciplinary Honors Committee will permit three hours of honors course work (excluding the thesis) to be applied to both interdisciplinary and department honors. One honors thesis may count toward both designations.

## COURSE DESCRIPTIONS

### INTERDISCIPLINARY HONORS (HONR)

(101H) **HONR 1701. Interdisciplinary Honors Seminar: Humanities. (3)** Prerequisite: consent of the Interdisciplinary Honors Committee. A small, discussion-oriented class team-taught by faculty members from different disciplines including a humanities discipline. Readings and other activities assigned in accordance with the theme selected for the course by the instructors. Fulfills three hours of humanities requirement. *(Fall)*

(102H) **HONR 1702. Interdisciplinary Honors Seminar: Social Sciences. (3)** Prerequisite: consent of the Interdisciplinary Honors Committee. A small discussion-oriented class team-taught by faculty members from different disciplines, including a social science discipline. Readings and activities assigned in accordance with theme selected by the instructors. Fulfills three credits of the social science requirement. *(Spring)*

(350H) **HONR 3700. Interdisciplinary Honors Topics. (3)** Prerequisite: junior standing and consent of the Interdisciplinary Honors Committee. Selected interdisciplinary topics either team-taught or individually taught at the honors level with at least one faculty member from an Arts and Sciences discipline. *(On demand)*

(400H) **HONR 3750. Interdisciplinary Honors Forum. (3)** Prerequisites: junior status and consent of the Interdisciplinary Honors Committee. Faculty members from different disciplines are invited by the course instructor to speak and lead discussions. *(On demand)*

(490H) **HONR 3790. Interdisciplinary Honors Thesis. (1-4)** Prerequisites: six hours of honors course work and consent of thesis director and Interdisciplinary Honors Committee. Honors research project directed by a faculty member. May be repeated for credit. *(On demand)*

# International Studies

*Director:* Professor Josephson

The Center for International Studies offers a minor that allows undergraduate students to pursue an interdisciplinary and comparative study of foreign cultures and societies while they fulfill the academic requirements for a major in one of the approved University degree programs. A program of study fulfilling this option may be viewed topically (with focus on world population, poverty, violence, or war and peace studies) or geographically (with focus on the Soviet Union, Western Europe, Africa, Asia, or Latin America).

Students minoring in International Studies may choose from a variety of courses and disciplines, including foreign languages, humanities, social sciences, and business. Students plan their individual programs of study with their department advisers and the Director of the Center for International Studies. The minor is designed to provide students with cultural and intellectual enrichment for more rewarding lives in an increasingly interdependent world. The program is of particular value to those with career objectives in government, business, trade, finance, law, journalism, teaching, military service, and health. It also serves those who will seek employment with international agencies such as the United Nations and with private religious and humanitarian service organizations.

**Study Abroad.** Students who take advantage of the study abroad opportunities provided by the Center for International Studies may apply their overseas study credits to the minor or, where appropriate, to their major. For more information on study abroad see the "Special Programs" section of this *Catalog* or contact the Study Abroad Coordinator in the Center for International Studies.

## INTERNATIONAL STUDIES MINOR

Students seeking a minor in International Studies must fulfill general University degree requirements, requirements for a selected major, and course work as outlined below. In addition, students are required to have a grade point average of at least 2.5 in their courses within the minor. Sepcific course requirements include:

I. Introductory course work selected from the following:

GEOG 1101 World Regional Geography
POLS 1150 Introduction to International Politics
HIST 1000 The World Since 1945
ANTH 1101 General Anthropology

II. Foreign language proficiency as approved by the Director of the Center for International Studies.

III. Related course work chosen from an extensive list of courses approved for the minor, which is available from the Center for International Studies, *or other appropriate courses* as approved by the Director.

Complete information about the minor in International Studies may be obtained from the Center for International Studies.

# Women's Studies

*Coordinator:* Associate Professor Blackwelder

Women's Studies is an academic pursuit devoted to the collection of information and the development of theories about women's roles and contributions to society. The goal of the Women's Studies Program is to provide an educational program that examines gender-related issues across cultures and across disciplines. The Program offers courses in Women's Studies and presents lectures and conferences on gender issues in business, the humanities, the sciences and the social sciences.

The minor in Women's Studies is designed to allow students to pursue an interdisciplinary and multicultural study of women's experience and contributions, while fulfilling the academic requirements for one of the approved University degree programs.

## WOMEN'S STUDIES MINOR

The Women's Studies minor, as well as each individual Women's Studies course, is open to all students at UNCC. Students seeking the minor will plan their program with their departmental advisors and with the Women's Studies Coordinator. They must fulfill general degree requirements and requirements for their selected major. In addition, they must complete a minimum of 21 hours of courses approved for the Women's Studies minor, including WMST 3101 (Introduction to Women's Studies). Courses other than WMST 3101, 3050 and 3803 are offered in established departments of The University. Any hours offered for the Women's Studies minor may also be counted toward major and general degree requirements. In order to qualify for the Women's Studies minor, students must have at least a 2.0 grade point average in courses taken for the minor.

Following is a list of the courses approved to satisfy requirements for the minor in Women's Studies. Other courses of appropriate content may be approved by the Coordinator as they become available.

ANTH 2121 Comparative Family Systems
ANTH 2145 Evolution of Human Sexual Behavior
CSLG 5100 Counseling Needs of Women
ENGL 4002 Women and Literature
ECON 3102 Consumer Economics
HLED 2101 Personal and Community Health
HIST 3290 History of Women in the United States
POLS 3133 Women and Politics
SOCY 2132 Marriage and the Family
SOCY 4261 Human Sexuality
SOCY 4263 Sociology of Sex Roles

Topics courses that have been offered include:

AAAS 3050 Afro-American Women
BUSN 3000 Women in Management
ANTH 4090 Women and Culture

## COURSE DESCRIPTIONS

**WMST 3101. Introduction to Women's Studies. (3)** Introduction to (1) the contributions and uses of various disciplines in the study of women—including sociology, economics, psychology, political science, history, literature, art, philosophy and ethnic studies; (2) the critical approaches, methodologies and tools for doing research related to women's experience; (3) the impact of gender; and (4) the role of values, institutions, and socialization processes in the lives of women in our own and other cultures. *(Fall, Spring)*

**WMST 3050. Topics in Women's Studies. (3)** Investigation of specific issues in Women's Studies, either from the perspective of a single discipline or in a multidisciplinary fashion. May be repeated for credit with the permission of the Women's Studies Coordinator. *(Alternate years)*

**WMST 3803. Independent Study. (3)** Prerequisite: permission of instructor and Women's Studies Coordinator. Supervised individual study and/or field-based experience in a topic or area of Women's Studies of particular interest to the student. May be repeated for credit. *(Fall, Spring, Summer) (Evenings)*

# College of Business Administration

*Dean:* Professor Neel
*Assistant Dean:* Assistant Professor Conboy

**Objectives.** The College of Business Administration is committed to excellence in instruction at both the undergraduate and the Master of Business Administration levels. The College provides a broad educational base which will help prepare the student for responsible leadership in business and professional life. The academic programs and methods of instruction are designed to maximize the opportunities for each student to develop his/her full intellectual potential.

In addition to the teaching mission, the College of Business Administration has a research role and a service role. Through research, publication and participation in the programs of professional organizations, the College seeks to make a contribution to the advancement of knowledge and to assist faculty members in their own professional development.

The service thrust covers both the internal dimension within The University and the external, or public, dimension. The College faculty are active in the committee and other service work of their respective departments, the College and The University. The College faculty also provide their expertise to a wide range of community, business and governmental groups and organizations.

**Programs.** The College of Business Administration has 2,500 students enrolled in its academic programs. The Department of Accounting offers a program leading to the Bachelor of Science degree, and full academic preparation for the Certified Public Accountant (CPA) designation; the Department of Business Administration and the Department of Economics offer programs leading to the Bachelor of Arts degree.

Programs are designed so that transfer students from community colleges and other institutions may enter the program and complete their degree requirements in the last two years of their college work. Students planning to take their first two years in community colleges should inform their adviser or counselor of their intent to apply to UNCC so that their program may be tailored to facilitate transfer.

The College also offers a Master of Business Administration program at the graduate level. This program is designed primarily for men and women who are fully employed and must undertake graduate study on a part-time basis. See pages 351-354 for information about the M.B.A. program.

**Satisfaction of Prerequisites and Enrollment in Upper-Division Courses.** Students must meet the prerequisites stated for the courses in the College of Business Administration. Enrollment in the upper division (3000- and 4000-level) courses offered by the College of Business Administration is open to juniors and seniors only.

**Evening Courses and Summer Sessions.** All courses required in the Business Administration and the Accounting degree programs are offered in the evening, as well as during the day. The Master of Business Administration program is offered entirely in the evening. A full program of summer offerings is also available.

**Scholarships.** There are several scholarships available for students in the College of Business Administration. Some of the scholarships are designated to recognize academic excellence in the junior and senior years. Further information can be obtained from the Financial Aid Office at UNCC.

**Careers.** Graduates in the Business Administration program may enter careers in: sales and marketing, banking and finance, transportation, personnel, manufacturing, retailing, insurance, public administration, management and real estate.

Accounting graduates find careers in: public accounting, internal auditing, government accounting, controllership and management.

Economics graduates may enter careers in: business economic analysis, teaching, research and government.

# Department of Accounting

*Chairperson:* Professor Turner
*Professor:* Godfrey
*Associate Professors:* Bhamornsiri, Guinn, Hinson, Jolly, Malmgren, Williamson
*Assistant Professors:* Cornick, Nunley, Odom
*Assistant Professor Emeritus:* Higgins
*Distinguished Lecturer:* Wallace
*Lecturers:* Baucom, Spear

The objective of the Accounting program is to educate students to commence and continue to develop in a wide range of professional accounting careers. This program provides conceptual and technical knowledge in the accounting and business areas which serves as a foundation for accounting career development.

The Accounting program is accredited by the American Assembly of Collegiate Schools of Business, which is recognized as the sole accrediting agency for baccalaureate degree programs in accounting by the U.S. Department of Education and by the Council on Postsecondary Accreditation. Graduates find a wide range of professional careers in public practice, industry, financial institutions, government and non-profit organizations. Students who complete a major in accounting will meet the educational requirements of the State of North Carolina to take the Certified Public Accountant Examination.

## BACHELOR OF SCIENCE

A major in accounting leading to the B.S. degree consists of 27 semester hours of accounting courses, Political Science 1101, Communication Studies 1101, and 36 semester hours of related work in business administration, economics and mathematics. All students must also fulfill the general education requirements of The University.

In addition to the University requirements of a 2.0 minimum grade point average, a student must have at least a 2.0 grade point average in all 3000-level required accounting courses in order to obtain a B.S. degree.

**Special Requirements for Acceptance into the Accounting Major with Freshman Standing and for Continuation into Junior- and Senior-Level Accounting Courses.** Applicants must have a predicted grade point average of at least 2.20 according to The University's calculation. A GPA of 2.75 or more in the following ten courses is required for enrollment in required junior- and senior-level accounting courses: ENGL 1101 and 1102; MATH 1101, 1120 and 1220; CSCI 1100; ECON 2101 and 2102; and ACCT 2121 and 2122.*

**Special Requirements for Acceptance of Transfer Students into the Accounting Major.** Applicants must present a grade point average of 2.75 or more in the following ten courses or the portion they have completed: ENGL 1101 and 1102; MATH 1101, 1120 and 1220; CSCI 1100; ECON 2101 and 2102; and ACCT 2121 and 2122. Applicants who have not completed all ten courses also must present an overall GPA of 2.5 or more. A GPA of 2.75 or more in the ten courses is required for enrollment in required junior- and senior-level accounting courses.*

**Effective Fall 1986.*

## CURRICULUM OUTLINE FOR THE ACCOUNTING MAJOR LEADING TO THE B.S. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| English 1101 | 3 | English 1102 | 3 |
| GOAL IV | 4 | GOAL IV | 4 |
| Mathematics 1101 | 3 | Mathematics 1120 | 3 |
| Political Science 1101 | 3 | Computer Science 1100 | 4 |
| Elective | 2 | Elective | 1 |
| | 15 | | 15 |

### Sophomore Year

| | | | |
|---|---|---|---|
| ACCT 2121 | 3 | ACCT 2122 | 3 |
| Statistics (MATH 1220) | 3 | Economics 2102 | 3 |
| Economics 2101 | 3 | Communication Studies 1101 | 3 |
| GOAL I: (W) | 3 | GOAL VI: (X) | 3 |
| GOAL III | 3 | GOAL V: (L) | 3 |
| | 15 | | 15 |

### Junior Year

| | | | |
|---|---|---|---|
| ACCT 3138 | 3 | ACCT 3136 | 3 |
| Business Administration 3110 | 3 | ACCT 3139 | 3 |
| Business Administration 3130 | 3 | Business Administration 3110 | 3 |
| Business Administration 3140 | 3 | Business Administration 3120 | 3 |
| GOAL I: (W) | 3 | Business Administration 3150 | 3 |
| | 15 | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| ACCT 3141 | 3 | ACCT 3147 | 3 |
| ACCT 3146 | 3 | ACCT 3148 | 3 |
| Business Administration 3280 | 3 | Electives | 9 |
| GOAL V: (A) | 3 | | |
| Elective | 3 | | |
| | 15 | | 15 |

Students planning to take the CPA Exam are encouraged to take the following courses in their senior year:.

| | |
|---|---|
| Accounting for Not-for-Profit Org. (ACCT 3130) | 3 hrs. |
| CPA Preparation (ACCT 3149) | 3 hrs. |
| Business Law II (BUSN 3250) | 3 hrs. |

**NOTE:** In order to avoid overspecialization, students should not normally take more than two elective courses in accounting.

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

### ACCOUNTING (ACCT)

(201) **ACCT 2121. Principles of Accounting I. (3)** Fundamental accounting principles, with emphasis on managerial use of accounting data and analysis of financial statements. Three lecture hours and one laboratory period of two hours a week. Lab period optional unless scheduled for an examination. *(Fall, Spring, Summer) (Evenings)*

(202) **ACCT 2122. Principles of Accounting II. (3)** Prerequisite: ACCT 2121. Basic accounting theory; corporate financing and reporting; financial planning; and an introduction to managerial accounting. Three lecture hours and one laboratory period of two hours a week. Lab period optional unless scheduled for an examination. *(Fall, Spring, Summer) (Evenings)*

(203) **ACCT 2123. Fundamentals of Accounting. (3)** Accelerated and in-depth introduction to the conceptual foundations of financial and managerial accounting. Appropriate as a foundation for further work in business management, personal financial management, estate planning, or applications to non-profit organizations. (Cannot be taken for credit by majors in College of Business Administration, but may be taken by MBA students to satisfy the accounting prerequisite.) Credit for ACCT 2123 cannot be applied toward ACCT 2121-2122. *(Fall, Spring) (Evenings)*

(490) **ACCT 3043. Current Developments in Accounting. (1) (2) or (3)** May be repeated for credit. Prerequisite: consent of the Department. A research project will be required. Topics will be selected from internal and external auditing, governmental accounting, income taxes, managerial accounting and accounting theory. *(Fall, Spring, Summer) (Evenings)*

(300) **ACCT 3130. Accounting for Not-for-Profit Organizations. (3)** Prerequisite: ACCT 2121 or equivalent. Accounting for governmental and other not-for-profit entities. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Fall, Summer)*

(330) **ACCT 3132. Statistics and Computers in Accounting. (3)** Prerequisites: MATH 1220, CSCI 1100 and ACCT 2122. A survey of statistical sampling techniques used in accounting. An introduction to accounting EDP systems, with particular emphasis on internal controls and computer auditing techniques. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Summer)*

(385) **ACCT 3134. Federal Income Taxation. (3)** Prerequisite: ACCT 2122. Open to non-Accounting majors only. Federal income tax laws and regulations applicable to individuals and business organizations. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Fall) (Evenings)*

(371) **ACCT 3136. Managerial Cost Accounting. (3)** Prerequisite: ACCT 2122. Analysis of the uses of accounting data in planning, controlling and decision-making processes of business enterprises. Three lecture hours and two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Fall, Spring, Summer) (Evenings)*

(374) **ACCT 3138. Intermediate Financial Accounting I. (3)** Prerequisite: ACCT 2122 with a grade of *C* or better. Analysis of the requirements of outsiders (investors, auditors and governments) for information about the status and operations of firms. The application of various theories and concepts will be stressed. Three lecture hours and two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Fall, Summer) (Evenings)*

(375) **ACCT 3139. Intermediate Financial Accounting II. (3)** Prerequisite: ACCT 3138 with a grade of *C* or better. Continuation of ACCT 3138 with an emphasis on accounting problems peculiar to corporate organizations. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Spring, Summer) (Evenings)*

(471) **ACCT 3141. Specialized Accounting Topics. (3)** Prerequisite: ACCT 3139 with a grade of *C* or better. Specialized accounting topics with emphasis on consolidated statements. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Fall, Summer) (Evenings)*

(477) **ACCT 3146. Income Tax for Individuals. (3)** Prerequisite: ACCT 2122 with a grade of *C* or better. Federal income tax laws and regulations applying to individuals. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Fall) (Evenings)*

(478) **ACCT 3147. Advanced Income Taxation. (3)** Prerequisite: ACCT 3146. Federal income tax laws and regulations applying to partnerships, corporations, estates and trusts, and estate, gift and inheritance taxes. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Spring) (Evenings)*

(475) **ACCT 3148. Internal Control and Auditing. (3)** Prerequisite: ACCT 3139 with a grade of *C* or better. Analysis of the accounting control systems and the independent auditor's examination of the system and other evidence as a basis for expressing an opinion on financial statements. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Spring) (Evenings)*

(479) **ACC 3149. CPA Preparation. (3)** Prerequisite: ACCT 3141. Intensive study of principles and techniques involved in the solution of advanced accounting problems encountered in public accounting practice. Three lecture hours, two laboratory hours per week. The laboratory period is optional unless scheduled for an examination. *(Spring)*

# Department of Business Administration

*Chairperson:* Professor Stevenson
*Professors:* Barnes, Conrad, Palmer, Trosch, Walls
*Associate Professors:* Cooper, Curran, Geurin, Kennedy, Paksoy, Robbins, Sage, Swayne
*Assistant Professors:* Bush, Calvasina, Conboy, Fields, Greco, Hogue, Hornaday, Kohut, McDonald, Nkomo, Nunnally, Poole, Saydam, Scheibal, Spraggins
*Adjunct Assistant Professor:* Miller
*Lecturers:* Baxter, Harris, Krueger, Tamer

The Department of Business Administration curriculum enables students to study all phases of business operation. It is particularly suitable for students who are (1) planning to operate their own businesses and are seeking a solid business foundation, (2) preparing for positions in large organizations where specialized skills are required, or (3) seeking a strong business background at the undergraduate level prior to taking more advanced graduate work.

The UNCC business administration program is accredited by the American Assembly of Collegiate Schools of Business, which is recognized as the sole accrediting agency for baccalaureate degree programs in business administration by the U.S. Department of Education and by the Council on Postsecondary Accreditation.

## BACHELOR OF ARTS

A major in business administration leading to the B.A. degree consists of a minimum of 120 semester hours which fulfill the general education requirements of The University. A minimum of 39 semester hours of business administration courses and 27 semester hours of related work in accounting, economics and mathematics is required, as listed below. The remaining 54 hours of other electives may be used as the student and his or her adviser deem advisable. At least 33 hours of these electives must be taken from courses offered outside the College of Business Administration.

The required business courses are BUSN 2130, 3100, 3110, 3120, 3130, 3140, 3150, 3160, 3280 and four other business courses at the 3200 level. The 27 hours of related work are Mathematics 1101, 1120 and 1220; Economics 2101, 2102 and 3125; and Accounting 2121, 2122 and 3136. In addition to the University requirement of a 2.0 minimum grade point average, a student must have at least a 2.0 grade point average with no more than one *D* left standing in the 66 hours required for the major. No business administration course can be repeated more than twice.

**Progression Requirements.** The prerequisites for most business administration courses are: Mathematics 1101, 1120, 1220; Economics 2101 and 2102; Accounting 2121 and 2122; and junior standing. Freshmen and sophomores should arrange their schedules to have the necessary prerequisites completed prior to their junior year. **Beginning Fall 1988,** students majoring in business administration must have a grade point average of 2.5 or more in the following (ten) courses for enrollment in 3000-level business courses: English 1101 and 1102; Mathematics 1101, 1120 and 1220; Accounting 2121 and 2122; Economics 2101 and 2102; and Business Administration 2130.

## AREAS OF CONCENTRATION

Areas of concentration are offered in the functional areas of business administration.

Twelve hours of upper-level business electives are required for graduation. The student may select these electives from several areas in order to gain broad knowledge of business organizations and processes (the General Business Concentration). Alternatively, the student may specialize in one of the functional areas to gain more specialized knowledge and skills. Specific requirements for each of the concentrations are:

**General Business Concentration-**Completion of any four 3200-level business electives. Primarily for the student who has decided not to specialize.

**Finance Concentration-**The finance curriculum is designed to develop analytical competence in corporate (business) finance, financial institutions, investment analysis, international finance, and asset valuation. Particular areas of emphasis are the planning of funds acquisition and the allocation of these funds. Students must complete any four of the following courses: BUSN 3220-Financial Analysis, BUSN 3221-Financial Institutions and Markets, BUSN 3222-Investment Analysis, BUSN 3223-International Finance, and BUSN 3224-Advanced Financial Management.

**Management Concentration-**The primary objective of the management concentration is to provide an understanding of the nature and capabilities of human and physical resources and how the manager acquires, utilizes, and maintains an optimum mix of these in an organizational setting. The emphasis of the concentration is on the integration of knowledge into a general systems orientation. Students must complete any four of the following courses: BUSN 3203-Management Science, BUSN 3240-Leadership and Organizational Behavior, BUSN 3241-Personnel Administration, BUSN 3273-Small Business Management, and BUSN 3274-International Business Processes and Problems.

**Management Information Systems Concentration-**The primary objective of the management information systems concentration is to provide an understanding of the manager's role in the development and use of computer-based systems. The emphasis of the concentration is on the integration of knowledge into a systems orientation. Students must complete BUSN 3234-Business Information Systems Development, BUSN 3236-Business Decision Support Systems and BUSN 3238-Information Resource Management; and either BUSN 3202-Advanced Business Analysis or BUSN 3203-Management Science.

**Operations Management Concentration-**The primary objective of the operations management concentration is to provide an understanding of an analytical and technical approach to designing business systems and solving business problems. Emphasis is on the development of the technical tools, analytical processes, techniques and models utilized in solving business problems. Students must complete BUSN 3201-Advanced Operations Management, BUSN 3202-Advanced Business Analysis and BUSN 3203-Management Science; and either BUSN 3234-Business Information Systems Development or BUSN 3236-Business Decision Support Systems.

**Marketing Concentration-**The marketing curriculum is designed to develop knowledge and competence in marketing analysis, planning and control. Courses are oriented toward problem solving and management decision making. Objectives, strategies and procedures for products, pricing, promotion and distribution are investigated for the consumer, industrial and service sector of the economy. Students must complete any four of the following courses: BUSN 3210-Marketing Research and Analysis, BUSN 3211-Advertising Management, BUSN 3212-Retailing Management, BUSN 3213-Personal Selling and Sales Management, and BUSN 3219-Marketing Strategy.

**Cooperative Education in Business Administration.** Students in the business administration program may obtain practical work experience related to their major by participating in cooperative education and alternating semesters of academic study with semesters of work experience. The work experience is approved by the Department of Business Administration Independent Study Review Committee and must be closely related to the student's major field of study. Students interested in learning more about the Cooperative Education Program should contact the Office of the Chairperson, Department of Business Administration.

**Recommended Four-Year Program.** The program outlined on the following page is recommended for students entering as freshmen who are not working and who plan to finish course work in eight semesters of full-time study. Transfer students, students who are working while attending school, and students attending summer school typically follow a schedule that varies according to their needs.

## RECOMMENDED CURRICULUM OUTLINE FOR THE BUSINESS ADMINISTRATION MAJOR LEADING TO THE B.A. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| English 1101 | 3 | English 1102 | 3 |
| Mathematics 1101 [1] | 3 | Mathematics 1120 [1] [3] | 3 |
| GOAL IV | 4 | GOAL IV | 4 |
| GOAL III | 3 | GOAL V: (L) | 3 |
| GOAL V: (A) | 3 | Elective | 3 |
| | 16 | | 16 |

### Sophomore Year

| | | | |
|---|---|---|---|
| Accounting 2121 [1] | 3 | Accounting 2122 [1] | 3 |
| Economics 2101 [1] | 3 | Economics 2102 [1] | 3 |
| Mathematics 1220 [1] | 3 | GOAL VI: (X) | 3 |
| GOAL I: (W) (outside major) | 3 | BUSN 2130 | 3 |
| GOAL VI: (C) | 3 | GOAL IV | 4 |
| | 15 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| BUSN 3110 | 3 | BUSN 3100 | 3 |
| BUSN 3150 | 3 | BUSN 3120 | 3 |
| BUSN 3160 (GOAL I: W) | 3 | BUSN 3130 | 3 |
| Accounting 3136 | 3 | BUSN 3140 | 3 |
| Elective | 3 | Elective | 3 |
| | 15 | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| ECON 3125 | 3 | BUSN 3280 [2] | 3 |
| Business Electives | 9 | Business Elective | 3 |
| Elective | 3 | Electives | 6 |
| | 15 | | 12 |

[1] Prerequisite for upper-division required business courses.
[2] To be taken after all 3000-level required business core courses have been fulfilled.
[3] MATH 1141 (Differential and Integral Calculus I) may be substituted for MATH 1120. Students preparing for graduate studies are advised to take MATH 1141.

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

## BUSINESS ADMINISTRATION (BUSN)

**Courses for Advanced Undergraduates**

### CORE COURSES

(300) **BUSN 3100. Operations Management. (3)** Prerequisites: MATH 1101, 1120, 1220; ECON 2101, 2102; ACCT 2121, 2122; junior standing. Introduction to and development of the management functions in manufacturing and non-manufacturing organizations. It will take a systems approach in providing an insight into the organizational environment, the basic operating functions, the problems and decisions a manager encounters and the solution techniques and models with which he/she deals. Computer application will be included where appropriate. *(Fall, Spring, Summer) (Evenings)*

(310) **BUSN 3110. Marketing Management. (3)** Prerequisites: ECON 2101, 2102; ACCT 2121, 2122; junior standing. The objective of this course is to acquaint the student with the marketing concept and the various aspects of marketing and its interface with the external environment and other functional areas of the organization. It is aimed at developing breadth in the subject and providing a foundation for further study in marketing. At the same time it will have wide enough coverage to stand alone for those who do not wish to concentrate in marketing. *(Fall, Spring, Summer) (Evenings)*

(320) **BUSN 3120. Financial Management. (3)** Prerequisites: MATH 1101, 1120, 1220; ECON 2101, 2102; ACCT 2121, 2122; junior standing. Principles and problems of financial aspects of managing an individual company. Particular emphasis on financial analysis for use in managing capital structure, least-cost asset management, planning and control. Computer application will be included where appropriate. *(Fall, Spring, Summer) (Evenings)*

(330) **BUSN 3130. Management Information Systems. (3)** Prerequisites: ECON 2101, 2102; ACCT 2121, 2122; BUSN 2130; junior standing. The focus of the course is on the impact of information systems on management decision-making activities. Principles of the structure and analysis of information flows within an organization are studied. Emphasis is placed on data base accumulation and generation, capabilities of information processing, system function (e.g., file creation, report generation, etc.), and evaluation and modification of information systems. *(Fall, Spring, Summer) (Evenings)*

(340) **BUSN 3140. Management Concepts and Practice. (3)** Prerequisites: ECON 2101, 2102; ACCT 2121, 2122; junior standing. Study of the role of the contemporary manager with emphasis upon the behavioral and administrative processes fundamental to the successful operation of various types of enterprise. Situational approaches to management are explored with the manager viewed as a decision maker interacting with the firm's economic, technological, social, political and ethical environment. Examination of research and theory in organizational behavior, organization theory and interpersonal communication. Case analysis is used to simulate actual problems encountered in organizations. *(Fall, Spring, Summer) (Evenings)*

(350) **BUSN 3150. Business Law I. (3)** Prerequisite: junior standing. A study of the legal setting of business and its relationship to the business firm. Topics covered include: the nature of law and the court system, torts, contracts, commercial paper, consumer credit, sales, partnerships, corporations, the employer-employee relationship, real and personal property. *(Fall, Spring, Summer) (Evenings)*

(360) **BUSN 3160. Business Communications. (3)** Prerequisite: junior standing. The nature and problems of individual, interpersonal and organizational communication in business. Various verbal techniques such as presentations, graphics, public speaking and writing will be developed and practiced for effective organizational and individual performance. *(Fall, Spring, Summer) (Evenings)*

(460) **BUSN 3280. Business Policy. (3)** Prerequisites: all other required business core courses. (Accounting majors are required to take as prerequisites only those Business Administration and Economics courses required for the B.S. degree in Accounting.) Concerns the role of top management of the firm in integrating internal functions and environmental forces. Emphasis on defining economic, technical, ethical, political and social factors affecting the firm and their consideration in setting goals and operating policies. *(Fall, Spring, Summer) (Evenings)*

## BUSINESS ELECTIVES

(401) **BUSN 3201. Advanced Operations Management. (3)** Prerequisite: BUSN 3100. This course, through cases and/or management simulations, will enable the student to apply the knowledge attained in Operations Management. The student, through an application forum, should develop in greater depth his/her understanding of the operating functions of an organization. *(Fall)*

(430) **BUSN 3202. Advanced Business Analysis. (3)** Prerequisite: BUSN 3100. A study of more advanced probabilistic business problems with extensive use of canned computer programs and preparing system models. The course will center on the application of decision theory to business problems. *(Spring)*

(431) **BUSN 3203. Management Science. (3)** Prerequisite: BUSN 3100. An analytical approach toward understanding the management process and solving management problems. Emphasis will be placed on exploring existing models, but the student should develop an insight for problem development and model building. *(Fall, Spring)*

(410) **BUSN 3210. Marketing Research and Analysis. (3)** Prerequisite: BUSN 3110. The research course will provide the student with an understanding of marketing research and its usefulness in the organization. The course will deal with scientific marketing research methods with emphasis on collection, analysis and interpretation of data as applied to the solution of marketing problems. *(Fall) (Evenings)*

(411) **BUSN 3211. Advertising Management. (3)** Prerequisite: BUSN 3110. This course will cover all areas of marketing promotion, including such topics as advertising, media selection, packaging and forms of sales promotion. This course will offer basic skills and techniques to allow the student to enter careers in advertising or media. *(Spring)*

(412) **BUSN 3212. Retailing Management. (3)** Prerequisite: BUSN 3110. Presents retailing as a part of the marketing distribution phase of a total interacting marketing system. Key concepts covered include consumer and market analysis, store location, store layout, merchandising, pricing and promotional issues and problems. Also considered are legal and environmental implications. The emphasis is on application of class concepts through case analysis and class discussion. *(Fall) (Evenings)*

(413) **BUSN 3213. Personal Selling and Sales Management. (3)** Prerequisite: BUSN 3110. An overview of the skills and knowledge involved in individual selling and the management of sales programs. Emphasis on sales and sales management theories and their applications. *(Spring)*

(419) **BUSN 3219. Marketing Strategy. (3)** Prerequisites: BUSN 3110 and senior standing. Integration of all marketing elements in a strategic planning framework. Emphasis on areas of strategic importance, especially those which have significant implications and relevance for marketing policy decisions in competitive situations. *(Spring)*

(420) **BUSN 3220. Financial Analysis. (3)** Prerequisite: BUSN 3120. Emphasis on interpretation of financial statements and other data for internal management purposes as well as external applications for commercial credit decisions (domestic and foreign). Practical application is stressed through the use of cases and other techniques such as class presentations. *(Fall)*

(421) **BUSN 3221. Financial Institutions and Markets. (3)** Prerequisite: BUSN 3120. A study of financial institutions and money and capital markets which considers their roles in the intermediation process. Special emphasis is focused on the comparative financial policies of financial institutions considered in the context of their market environments. *(Spring)*

(422) **BUSN 3222. Investments. (3)** Prerequisite: BUSN 3120. Major topics are security analysis and portfolio management. The viewpoint is that of the investment professional concerned with evaluation of individual securities and management of security portfolios. *(Fall) (Evenings)*

(423) **BUSN 3223. International Financial Management. (3)** Prerequisite: BUSN 3120. Viewpoints are those of the senior financial officer of a corporation involved in international business and of the international officer of a commercial bank. Topics include the financing of exports and imports, financing of foreign operations, problems of foreign exchange rates and the impact of accounting procedures on financial management. *(Fall)*

(424) **BUSN 3224. Advanced Financial Management. (3)** Prerequisite: BUSN 3120. Advanced study of the theories and techniques of financial management as they relate to the goal of the financial manager: the maximization of the value of the firm. Topics include financial planning, valuation, financial instruments, financial structure, and capital budgeting. *(Summer)*

(434) **BUSN 3234. Business Information Systems Development. (3)** Prerequisites: BUSN 2130, 3130, 3140 or permission of the Department. An examination of the systems development process from a managerial perspective. The objective is to provide an understanding of the concepts, processes and techniques involved in successfully moving through the systems development life cycle. An emphasis will be placed on understanding the advantage of using structured techniques to overcome the complexities involved in systems development. *(Fall)*

(436) **BUSN 3236. Business Decision Support Systems. (3)** Prerequisites: BUSN 2130, 3120, 3130, 3140 or permission of the Department. A study of the application of the computer as a tool to the decision making of top level managers. Principles of developing and utilizing such systems will be studied. Emphasis is placed upon computer assistance with specific upper level decisions and decision makers. Students will utilize "packaged" software for specific development projects. *(Spring)*

**BUSN 3238. Information Resource Management. (3)** Prerequisites: BUSN 2130, 3130, 3140, or permission of the Department. A study of the management of information and information systems in an organization. The objective is to provide an understanding of the activities and techniques used to help an organization meet its information needs. *(Spring)*

(440) **BUSN 3240. Leadership and Organizational Behavior. (3)** Prerequisite: BUSN 3140. A managerial perspective of the influence of leadership, motivation, group dynamics, structure, communications, conflict and change on effective utilization and development of human resources with emphasis on the role of a leader as a change agent. Case analysis, role playing and skills development exercises are used to simulate actual situations. *(Fall, Spring) (Evenings)*

(441) **BUSN 3241. Personnel Administration. (3)** Prerequisite: BUSN 3140. The study of effectively selecting, utilizing, assessing and developing managers as well as the role of the personnel department in administering human resources in a changing and demanding environment. Experience in developing and utilizing behavioral science research methods to assess effectiveness. *(Fall, Spring) (Evenings)*

(450) **BUSN 3250. Business Law II. (3)** Prerequisite: BUSN 3150. The study of the Uniform Commercial Code. Subjects covered include sale of goods, commercial paper, bank deposits and collections, letters of credit, bulk transfers, documents of title, investment securities and secured transactions. *(Fall, Spring, Summer) (Evenings)*

(452) **BUSN 3252. Construction Law. (3)** Prerequisite: junior standing. This course examines the legal problems encountered by architects, engineers, contractors, owners, sureties and lenders involved in the construction process. Special emphasis is placed on the legal rights and liabilities of the various participants in construction projects. Claims preparation, negotiation, arbitration and litigation methods of dispute resolution. *(Spring)*

(473) **BUSN 3273. Small Business Management. (3)** Prerequisites: BUSN 3100, 3110, 3120, 3140; junior standing. Consideration of opportunities and obstacles of starting and operating a small business. Emphasis will be on integrating all managerial requirements (financial, marketing, operation, legal, logistics, accounting and behavioral) of owning and operating a small business. Study of opportunities and assistance provided by franchises, federal, state and local agencies. Practice in solving problems gained through case analysis. *(Fall, Summer)*

(474) **BUSN 3274. International Business Processes and Problems. (3)** Prerequisite: junior standing. An introduction to the process, institutions and problems associated with exporting, importing and management of multinational businesses. *(Fall)*

## GENERAL ELECTIVES

(230) **BUSN 2130. Introduction to Business Computing. (3)** Prerequisites: MATH 1101 or equivalent; sophomore status. Introduction of computer methods to solve business problems. Emphasis on understanding fundamental hardware and software concepts, selecting and using appropriate hardware and software needed for making various business decisions, and developing practical methods for using the computer to solve quantitative business problems. (May not be taken for upper-level credit in business, but may be taken for general University credit.) *(Fall, Spring) (Evenings)*

(390) **BUSN 3000. Topics in Business. (3)** Prerequisite: junior standing. Topics from the area of Management and Administration. The course may be repeated for credit. *(On demand)*

(351) **BUSN 3151. Employment Law. (3)** Prerequisite: junior standing. This course examines the legal principles and legislation which control employment decisions in union and non-union settings. Topics covered include fair employment practices, anti-discrimination law, representation elections, unfair labor practices and dispute settlement processes. (Same as ECON 3107.) *(Fall)*

(361) **BUSN 3161. Advanced Business Communications. (3)** Prerequisites: BUSN 3160, junior standing. Advanced course in oral and written communications, with emphasis on tailoring messages to a variety of business situations. Communication theory will be translated into practice through in-class exercises, the delivery of several speeches, and the preparation of an analytical report appropriate to the student's chosen field. *(Spring)*

(370) **BUSN 3170. Personal Finance. (3)** Prerequisite: junior standing. A course in the management of personal and family financial affairs. Topics include family financial planning and budgeting, saving for financial emergencies, consumer purchases and the use of credit, security and real estate investments, protection against premature death or disability, providing retirement income, insurance needs, income and estate tax planning. *(Fall, Spring) (Evenings)*

(371) **BUSN 3171. Principles of Insurance. (3)** Prerequisite: junior standing. A study of the different types of nonspeculative risks faced by individuals and businesses and the possible alternative methods of treating such risks. An examination of the specific application of these methods with regard to life, health, property, casualty and liability insurance contracts. *(On demand)*

(372) **BUSN 3172. Real Estate. (3)** Prerequisite: junior standing. A survey of problems involved in the acquisition, management and transfer of real estate. Topics include real estate contracts and leases; deeds, mortgages and other liens; real estate brokerage; appraisals and financing; taxation; and government regulations. *(On demand)*

***BUSN 3500. Cooperative Education Experience. (0)** Enrollment in this course is required for the Department's cooperative education students during any semester they are working in a co-op position. This course is restricted to majors in the Department of Business Administration. Course evaluation is *Satisfactory/Unsatisfactory*. *(Spring, Summer, Fall)*

(490) **BUSN 3800. Directed Study. (1-6)** Prerequisites: consent of the Department and junior standing. Enrollment granted only by permission of the faculty with whom the work will be performed. The student's work assignments will be designed by the student and faculty member who will oversee the project of study. The credit hours will be determined prior to enrollment and will be based on the particular project undertaken. *(On demand)*

*Before applying for the co-op program, a major in the Department of Business Administration must have completed 30 credit hours with a minimum overall GPA of 2.50. A transfer student must have completed 30 credit hours with at least 15 hours at UNCC and a minimum GPA of 2.50 in UNCC courses. Before enrolling in BUSN 3500, the student must have completed a minimum of 50 credit hours including all requirements for the major through the sophomore year. All courses must be completed with a minimum overall UNCC GPA of 2.50 and the student's major course work through the sophomore year must be completed with a minimum of 2.75 for courses completed at UNCC. Completion of specific courses related to the proposed co-op position may be required prior to enrollment in BUSN 3500. These courses will be established by the co-op adviser and then submitted to the Independent Study Committee for consideration prior to approval from the Department. For an undergraduate to be designated a co-op student, he/she must successfully participate in a minimum of two co-op work semesters.

# Department of Economics

*Chairperson:* Professor Davis
*Professor Emeritus:* Wubben
*Associate Professors:* Amato, Connaughton, Liner, Madsen, Schwarz, Zuber
*Associate Professor Emeritus:* Rogers
*Assistant Professors:* Abell, Gandar, Graham, Miller, Russo, Tucker
*Lecturer:* Belcher

The study of economics offers students a problem-solving discipline to foster their intellectual and career development. It provides students a balanced and broad educational background and prepares them to choose from a wide range of career alternatives.

The Economics program explores the economic decisions of individuals, businesses, governments and other institutions. It examines the nature of economic activity, why it takes place and how it affects everyone's lives. The program includes elective courses which enable students to tailor their educational program to meet personal needs and interests. The study of economics also helps students develop a way of thinking that is logical and rigorous. It provides decision-making tools that they can apply to personal as well as business decisions and use to address the many economic decisions they will face in the future.

The Economics Department offers two programs leading to the Bachelor of Arts degree. Students who plan to pursue careers in business-related fields such as banking, finance and international commerce, or who plan to enter an MBA program, are encouraged to elect the business administration emphasis program. Students planning to pursue a career in education, enter graduate school in economics, or attend law school are encouraged to pursue the program with social science emphasis.

## BACHELOR OF ARTS

**Business Administration Emphasis.** A major in economics, with business administration electives, leading to the B.A. degree consists of 60 hours specified as follows:

I. Mathematics:

| | |
|---|---|
| Basic Concepts of Mathematics (MATH 1101)* | 3 |
| Calculus (MATH 1120)* | 3 |
| Elements of Statistics (MATH 1220) | 3 |
| Business Computing (BUSN 2130) | 3 |

II. Economics:

| | |
|---|---|
| Principles of Economics (ECON 2101 and 2102) | 6 |
| Economics of the Firm (ECON 3125) | 3 |
| Econometrics (ECON 3112) | 3 |
| Industrial Organization and Public Policy (ECON 4180) | 3 |
| Two of the following: | |
| Money and Banking (ECON 3115) | |
| Microeconomic Analysis (ECON 3122) | |
| Macroeconomic Analysis (ECON 3123) | 6 |

III. Business Administration and Accounting:

| | |
|---|---|
| Principles of Accounting (ACCT 2121 and 2122) | 6 |
| Financial Management (BUSN 3120) | 3 |
| Two of the following: | |
| Marketing Management (BUSN 3110) | |
| Business Law I (BUS 3150) | |
| Operations Management (BUSN 3100) | |
| Management Concepts and Practices (BUSN 3140) | 6 |

IV. Economics Electives:

| | |
|---|---|
| To be selected by the student from the 3000- and 4000-level offerings of the Department of Economics | 12 |

**Will satisfy general education requirements for GOAL II: Problem Solving.* *(See pages 74-75.)*

In computing the grade point average in the major all required courses are included. Not more than one grade of *D* will count toward the specified hours for a major in economics. No economics course can be repeated more than once to improve the grade in the course. The second and any subsequent grade(s) in a repeated course(s) will be included in all GPA calculations.

It is recommended that students who plan to take graduate work in economics take additional work in mathematics and consult with their advisers concerning the recommendation.

**Social Science Emphasis.** A major in economics, with social science electives, leading to the B.A. degree consists of 60 hours specified as follows:

I. Mathematics:

Basic Concepts of Mathematics (MATH 1101)* ..... 3
Calculus (MATH 1120)* ..... 3
Elements of Statistics (MATH 1220) ..... 3
Business Computing (BUSN 2130) ..... 3

II. Economics:

Principles of Economics (ECON 2101 and 2102) ..... 6
Microeconomic Analysis (ECON 3122) ..... 3
Macroeconomic Analysis (ECON 3123) ..... 3
Econometrics (ECON 3112) ..... 3
History of Economic Thought (ECON 4177) ..... 3

III. Social Science Electives:

Course work to be selected from at least three of the following disciplines: anthropology, criminal justice, geography, history, political science, psychology, sociology, and social work ..... 15

IV. Economic Electives:

To be selected by the student from the 3000- and 4000-level offerings of the Department of Economics ..... 15

In computing the grade point average in the major all required courses are included. Not more than one grade of *D* will count toward the specified hours for a major in economics. No economics course can be repeated more than once to improve the grade in the course. The second and any subsequent grade(s) in a repeated course(s) will be included in all GPA calculations.

Course work satisfying general University requirements will not count toward the 15-hour Social Science requirement.

**Cooperative Education Program.** Economics majors may obtain practical work experience by participating in cooperative education. Students in this program alternate semesters of academic study with semesters of work experience approved by the Department. Students interested in learning more about the Cooperative Education Program should contact the Department of Economics.

## ECONOMICS MINOR

A minor in economics requires: 18 semester hours of economics to include ECON 2101, 2102 and either 3125 or 3122, and at least nine additional hours at the 3000 or 4000 level excluding 3102 and 3103. A minimum GPA of 2.0 is required in the 18 hours.

In computing the grade point average in the minor all required courses are included. Not more than one grade of *D* will count toward the specified hours for a minor in economics. No economics course can be repeated more than once to improve the grade in the course. The second and any subsequent grade(s) in a repeated course(s) will be included in all GPA calculations.

**Will satisfy general education requirement for GOAL II: Problem Solving.* *(See pages 74-75.)*

## CURRICULUM OUTLINE FOR THE ECONOMICS MAJOR WITH BUSINESS ADMINISTRATION ELECTIVES LEADING TO THE B.A. DEGREE

### Freshman Year

| | |
|---|---|
| English 1101 | 3 |
| Mathematics 1101 | 3 |
| GOAL IV | 4 |
| GOAL V: (A) | 3 |
| General University Elective | 2 |
| | 15 |

| | |
|---|---|
| English 1102 | 3 |
| Mathematics 1120 | 3 |
| GOAL IV | 4 |
| GOAL VI: (C) | 3 |
| General University Elective | 2 |
| | 15 |

### Sophomore Year

| | |
|---|---|
| Principles of Economics (ECON 2101) | 3 |
| Introduction to Business Computing (BUSN 2130) | 3 |
| Principles of Accounting (ACCT 2121) | 3 |
| GOAL III | 3 |
| GOAL VI: (X) | 3 |
| | 15 |

| | |
|---|---|
| Principles of Economics (ECON 2102) | 3 |
| Principles of Accounting (ACCT 2122) | 3 |
| Elements of Statistics (MATH 1220) | 3 |
| GOAL I: (W) | 3 |
| GOAL V: (L) | 3 |
| | 15 |

### Junior Year

| | |
|---|---|
| Econometrics (ECON 3112) | 3 |
| Microeconomic Analysis (ECON 3122) or Money and Banking (ECON 3115) | 3 |
| Economics Elective | 3 |
| GOAL I: (W) | 3 |
| General University Elective | 3 |
| | 15 |

| | |
|---|---|
| Economics of the Firm (ECON 3125) | 3 |
| Macroeconomic Analysis (ECON 3123) or Money and Banking (ECON 3115) | 3 |
| Economics Elective | 3 |
| Business Elective | 3 |
| General University Elective | 3 |
| | 15 |

### Senior Year

| | |
|---|---|
| Industrial Organization and Public Policy (ECON 4180) | 3 |
| Financial Management (BUSN 3120) | 3 |
| Economics Elective | 3 |
| General University Electives | 6 |
| | 15 |

| | |
|---|---|
| Economics Elective | 3 |
| Business Elective | 3 |
| General University Electives | 9 |
| | 15 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## CURRICULUM OUTLINE FOR THE ECONOMICS MAJOR WITH SOCIAL SCIENCE ELECTIVES LEADING TO THE B.A. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| English 1101 | 3 | English 1102 | 3 |
| Mathematics 1101 | 3 | Mathematics 1120 | 3 |
| GOAL IV | 4 | GOAL IV | 4 |
| GOAL V: (A) | 3 | GOAL VI: (C) | 3 |
| General University Elective | 2 | General University Elective | 2 |
| | 15 | | 15 |

### Sophomore Year

| | | | |
|---|---|---|---|
| Principles of Economics (ECON 2101) | 3 | Principles of Economics (ECON 2102) | 3 |
| Introduction to Business Computing (BUSN 2130) | 3 | Social Science Elective | 3 |
| Social Science Elective | 3 | Elements of Statistics (MATH 1220) | 3 |
| GOAL III | 3 | GOAL I: (W) | 3 |
| GOAL VI: (X) | 3 | GOAL V: (L) | 3 |
| | 15 | | 15 |

### Junior Year

| | | | |
|---|---|---|---|
| Econometrics (ECON 3112) | 3 | Macroeconomic Analysis (ECON 3123) | 3 |
| Microeconomic Analysis (ECON 3122) | 3 | Economics Elective | 3 |
| Social Science Elective | 3 | Social Science Elective | 3 |
| GOAL I: (W) | 3 | General University Electives | 6 |
| General University Elective | 3 | | |
| | 15 | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| Social Science Elective | 3 | History of Economic Thought (ECON 4177) | 3 |
| Economics Electives | 6 | Economics Electives | 6 |
| General University | 6 | General University Electives | 6 |
| | 15 | | 15 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

## ECONOMICS (ECON)

### Courses for Undergraduates

**ECON 1090. Topics in Economics. (1-3)** Consideration of topics from the areas of economic theory, economic development, consumer economics, welfare economics and current economic problems. May be repeated for credit as topics vary. *(On demand)*

(101) **ECON 1101. Economics for Non-Majors. (3)** Economic issues without emphasis on theoretical models. Contemporary economic issues such as pollution control, consumer protection and the energy crisis. May not be taken for credit if credit has already been received for either ECON 2101 or 2102. *(On demand)*

(201) **ECON 2101. Principles of Economics-Macro. (3)** Scope and methodology of economics as a social science, the measurement of national income, the theory of national income determination, money and banking, monetary and fiscal policy, and international economics. *(Fall, Spring, Summer) (Evenings)*

(202) **ECON 2102. Principles of Economics-Micro. (3)** Pricing mechanism of a market economy, the industrial organization of the U.S. economy, problems of economic concentration, the theory of income distribution, and comparative economic systems. *(Fall, Spring, Summer) (Evenings)*

(390) **ECON 3090. Topics in Economics. (3)** Prerequisite: consent of the Department. Topics from the areas of economic theory, economic development, consumer economics, welfare economics and current economic problems. May be repeated for credit. *(On demand)*

(302) **ECON 3102. Consumer Economics. (3)** Economic analysis of consumer issues with emphasis on economic decision making. Topics include consumer protection and government regulation, determination of family income, advertising, health care, inflation, taxation, and investment decisions. May not be taken for upper-level credit in business or economics, but may be taken for general University credit. *(On demand)*

(303) **ECON 3103. Economic Concepts. (3)** Microeconomic and macroeconomic concepts for students without prior courses in economics who plan to enter MBA programs. The scope and method of economics, the pricing mechanism of markets, the industrial organization of the U.S. economy, the measurement of national income, the theory of national income determination, money and banking, and monetary and fiscal policy. Credit will not be given for ECON 3103 where credit has been given for ECON 2101 or ECON 2102. *(Fall, Spring) (Evenings)*

(305) **ECON 3105. Industrial Relations. (3)** Prerequisite: introductory course in economics or consent of instructor. Systematic analysis of the sociological, economic and legal forces affecting the work environment. Emphasis on labor unions and employment law. *(Fall, Spring)*

(306) **ECON 3106. Labor Economics. (3)** Prerequisites: ECON 2101 and 2102. Economics of labor markets with emphasis on wage and employment theory, collective bargaining, and human capital theory. Historical and legal forces affecting labor markets. *(Spring)*

(307) **ECON 3107. Employment Law. (3)** Legal principles and legislation which control employment decisions in union and non-union settings. Topics include fair employment practices, anti-discrimination law, representation elections, unfair labor practices and dispute settlement processes. (Same as BUSN 3151.) *(On demand)*

(312) **ECON 3112. Econometrics. (3)** Prerequisites: ECON 2101 and 2102, MATH 1120 and 1220, and BUSN 2130. Econometric techniques including simple and multiple least squares regression with problems and analyses. *(Fall, Summer)*

(314) **ECON 3114. Research Methods. (3)** Prerequisites: MATH 1220, BUSN 2130, and ECON 3112 or 3117. Introduction to research in economics including major sources of data and information with emphasis on application of elementary research methods to economic problems. *(On demand)*

(315) **ECON 3115. Money and Banking. (3)** Prerequisite: ECON 2101. The characteristics and functions of money in the modern economy, monetary theory and policy, and financial institutions. *(Fall, Spring, Summer)*

(317) **ECON 3117. Business and Economic Forecasting. (3)** Prerequisites: ECON 2101 and 2102, MATH 1120 and 1220, and BUSN 2130. Analysis of fluctuations in economic activity, including production, employment, prices and industry sales. Topics include forecasting methods, business cycle theories, historical record, industry and sales forecasting. *(On demand)*

(322) **ECON 3122. Microeconomic Analysis. (3)** Prerequisites: ECON 2101 and 2102 and MATH 1120. Microeconomic analysis with emphasis on consumer theory and the theory of production. Resource allocation and the determination of optimum output and pricing by a firm operating under various market structures. Distribution and welfare theories. *(Fall)*

(323) **ECON 3123. Macroeconomic Analysis. (3)** Prerequisites: ECON 2101 and 2102 and MATH 1120. Analysis of economic aggregates with inflation, unemployment, and income determination. Keynesian, Classical, Monetarist, and supply side models. *(Spring)*

(325) **ECON 3125. Economics of the Firm. (3)** Prerequisites: ECON 2102, MATH 1120 and MATH 1220. Economic decisions of particular interest to business firms. Topics include demand theory and forecasting; cost analysis and pricing policies. *(Fall, Spring, Summer) (Evenings)*

**ECON 3131. Economic History of the United States. (3)** Prerequisite: ECON 1101 or 2101 or 2102. Use of economic models to further understanding of the growth and development of the U.S. economy from colonial times to the Great Depression. Emphasis on the sources and consequences of American growth, with particular emphasis on technological, demographic, and institutional changes. *(On demand)*

**ECON 3133. Economic History of Europe. (3)** Prerequisite: ECON 1101 or 2101 or 2102. Use of economic models to further understanding of the economic development of Europe from the early modern period to the present. Emphasis on the demographic, institutional, and technological changes underlying the process of economic growth and the impact of European economic growth on the rest of the world through international trade, investment, and migration. *(On demand)*

(370) **ECON 3170. Monetary and Fiscal Policy. (3)** Prerequisite: ECON 2101. Monetary and fiscal policy in the context of the U.S. economy, the impact of monetary and fiscal policy on employment; economic growth and price stability. *(On demand)*

(375) **ECON 3175. Comparative Economic Systems. (3)** Prerequisite: ECON 2102. Compares and contrasts capitalism, socialism, and communism both in theory and practice. *(Fall)*

**ECON 3500. Cooperative Education Experience. (0)** Enrollment in this course is required for the Department's Cooperative Education students during any semester they are working in a Co-op position. Restricted to majors in the Department of Economics. *(On demand)*

(395) **ECON 3895. Directed Individual Study. (1-3)** Prerequisites: permission of the instructor and the Department. Independent study of a theoretical and/or a policy problem in a special area of economics. Students may pursue a particular program in depth. Topics of the investigation may originate from the student or from the faculty member supervising the study. May be repeated for credit. *(Fall, Spring, Summer) (Evenings)*

**Courses for Advanced Undergraduates and Graduate Students***

(400) **ECON 4100. Mathematical Economics. (3) (3G)** Prerequisites: ECON 2101 and 2102 and MATH 1120. Both microeconomic and macroeconomic problems are analyzed with quantitative techniques. Emphasis is given to the study of methods for mathematically formulating economic relationships including the tools used for finding maximums, minimums and limits to single, recursive and simultaneous economic relationships. *(Alternate years)*

(405) **ECON 4105. Negotiations and Bargaining Strategy. (3) (3G)** Prerequisites: ECON 2102 and 3105. Theories of negotiation strategy. Emphasis on the negotiation of collective bargaining contracts. Topics include the use of arbitration, mediation, conciliation and fact-finding boards to resolve disputes. *(On demand)*

(412) **ECON 4112. Econometrics II. (3) (3G)** Prerequisite: ECON 3112 or consent of instructor. Tools of analysis are more extensive and of a greater depth than those studied in ECON 3112. Regression and correlation techniques are applied to economic and business problems derived from government and business environments. *(Alternate years)*

**Additional work required for students receiving graduate credit.*

(416) **ECON 4116. Public Finance. (3) (3G)** Prerequisites: ECON 2101 and 2102. Revenue and expenditure problems of governmental units, intergovernmental financial relationships and the impact of federal fiscal policy upon the American economy. *(On demand)*

(435) **ECON 4135. Economics of Development. (3) (3G)** Prerequisite: ECON 2102. Theories of economic growth and development applied to varying economic and social systems. Current theoretical models and their relevance to efficient allocation of resources to both the developed and the developing nations. *(On demand)*

(450) **ECON 4150. Urban and Regional Economics. (3) (3G)** Prerequisite: ECON 2102. Spatial and economic organization of cities and regional areas and their special economic problems. Topics include economic growth, urban location and land use, poverty, housing, public finance and urban transportation. *(On demand)*

(460) **ECON 4160. Economics of Transportation. (3) (3G)** Prerequisite: ECON 2102. Analysis of transportation systems. Topics include the historical development of various modes, costs and rate-making, regulation and national transportation policy. *(On demand)*

(471) **ECON 4171. Economics of International Trade. (3) (3G)** Prerequisites: ECON 2101 and 2102. Theory of international trade. Topics include determination of international trade patterns, welfare implications of international trade, economic integration, and effects of tariffs and quotas. *(Fall)*

(472) **ECON 4172. Economics of International Finance. (3) (3G)** Prerequisites: ECON 2101 and 2102. Survey of international monetary theory. Topics include exchange rate determination, balance of payments and adjustment, international liquidity, capital movements, international financial organizations and monetary reform proposals. *(Spring)*

(477) **ECON 4177. History of Economic Thought. (3) (3G)** Prerequisites: ECON 2101 and 2102. History of economics as a science and the evolution of theories of value, distribution and employment. Review of the works of Adam Smith, Thomas Malthus, David Ricardo, Karl Marx, Alfred Marshall, Thorstein Veblen, and John Maynard Keynes. *(Spring)*

(480) **ECON 4180. Industrial Organization and Public Policy. (3) (3G)** Prerequisite: ECON 2102. An examination of the characteristics of monopolistic competition, oligopoly, and monopoly and questions of public policy in dealing with problems created by industrial concentration. *(Fall, Summer)*

(481) **ECON 4181. Energy and Environmental Economics. (3) (3G)** Prerequisite: ECON 2102. Introduction to the economic issues of both energy and environment. Energy issues include the historical development of energy resources, supply and demand considerations and projections of the future energy balance. Environmental issues are externalities, common property resources and government regulation. Policy considerations include environmental standards, pollution charges and property rights. Cost-benefit analysis and microeconomic theory are applied. *(On demand)*

(482) **ECON 4182. Public Utilities. (3) (3G)** Prerequisite: ECON 2102. Economic issues of public utilities, with emphasis on the theory and methods of rate-making and regulation. *(On demand)*

(449) **ECON 4449. Work-Study Program in Economics. (3-6 or 3-6G hours credit, by determination of Department of Economics.)** Prerequisites: ECON 2101 and 2102. Enrollment granted only by permission of the Department of Economics. Prior to enrollment, plans for the student's work assignments in this course must be completed. Assignments in government, utilities, banking and other paid employment must utilize the techniques and principles learned in core requirements in economics. Work assignments require faculty contact with the student and employer to insure satisfactory performance by the student. A maximum of three hours can be used to meet upper-level economics elective requirements. *(Fall, Spring, Summer) (Evenings)*

UNDERGRADUATE CREDIT IS AVAILABLE FOR ECON 5090 AND 5102 (GRADUATE-LEVEL COURSES). FOR COMPLETE COURSE DESCRIPTIONS, SEE PAGE 430..

# College of Education and Allied Professions

*Dean:* Professor Heller
*Associate Dean:* Assistant Professor Gwaltney

The College of Education and Allied Professions is composed of the Departments of Curriculum and Instruction, Educational Administration, Health and Physical Education, Human Services, and ROTC programs in Air Force Aerospace Studies and Army Military Science. The Bachelor of Arts degree in Education is offered in the Department of Curriculum and Instruction; the Bachelor of Arts degree in Human Development and Learning is offered in the Department of Human Services; and the Master of Education and Master of Human Development and Learning degrees are offered by the College. In addition, the Certificate of Advanced Study (Sixth Year) program is offered by the College in specified certification areas. The Department of Educational Administration offers graduate programs in Educational Administration and in Curriculum and Instruction (Supervision). For complete information on graduate-level programs offered by the College, see the Graduate School section of this *Catalog*.

**Undergraduate Programs.** The Bachelor of Arts degree in Education offered by the Department of Curriculum and Instruction is designed for the preparation of early childhood, intermediate, middle grades, and special education teachers. Certification can be added in English as a Second Language. Within the Department of Human Services the Bachelor of Arts degree in Human Development and Learning is designed for the preparation of child and family development specialists, program directors for community agencies, infant and day care coordinators, human services specialists, and other related personnel for a variety of human service professions. In addition, the Department of Curriculum and Instruction offers a professional sequence leading to teacher certification for individuals who major in an academic area and plan to teach at secondary levels.

Teacher preparation programs of The University are approved for teacher certification by the North Carolina State Department of Public Instruction and accredited by the National Council for Accreditation of Teacher Education.

The Aerospace Studies and Military Science programs are organized in accordance with the regulations of their respective military branches and the rules and regulations of The University. Successful completion of either program will qualify the student to serve as a commissioned officer in the respective branch of service. All students in these programs pursue majors in one or more of the degree programs offered by The University or one of the institutions of higher education in the Charlotte Area Educational Consortium.

In addition, the College has the capacity to offer basic study in the field of library science. The courses listed in the *Catalog* are not offered routinely and will be offered only when there is documented need and demand for a course and/or courses. (See page 431.)

## SERVICES AND SPECIALIZED RESOURCES

**Curriculum and Instructional Materials Center.** Located in the Atkins Library, the Center provides a laboratory for students and faculty to study and experiment with curriculum and instructional materials and methods. Included in the Center are over 2,500 elementary and secondary textbooks, a file of standardized tests, several hundred educational games and simulations, a collection of professional education books, pamphlets and periodicals, curriculum guides from school systems throughout the country, and numerous other resources for the teacher education professions.

**Educational Media and Technology Laboratory.** The College of Education and Allied Professions provides a variety of courses and laboratory experiences to prepare students to effectively use contemporary communications media and technology. Students receive instruction and hands-on experiences in using instructional design, photography, display techniques, overhead transparencies, motion pictures, microcomputers, interactive instruction, television and other media to enhance teaching and communication skills. The Laboratory houses microcomputers, printers, an interactive video instructional system, and a variety of educational applications software. The Laboratory

is equipped for black and white film development and processing, production of overhead transparencies, video tape production and viewing, dry mounting and laminating of educational materials, and educational slide copying and editing.

**Atkins Library and Media Services.** The University Library maintains an extensive collection of professional education books, periodicals and reserve documents representing all subject areas and grade levels. It subscribes to approximately 500 education-related periodicals and maintains a vertical file containing non-catalogued education materials. The Library is a government documents depository.

Media Services provides students and faculty with audiovisual teaching and learning resources. An extensive collection of audiovisual equipment, 800 motion picture films, and graphic and television production services are available for students and faculty. Instruction is provided in the preparation and use of audiovisual media and equipment.

**Teacher Placement.** The Placement Office in the Division of Student Affairs, in cooperation with the College of Education and Allied Professions, provides placement services for qualified graduates. All students in educational programs are urged to file their credentials in the Placement Office. This service provides a quick and convenient means for requesting and mailing credentials to prospective employers. Many prospective employers use the Placement Office to announce and recruit for their openings.

## NORTH CAROLINA TEACHER CERTIFICATION

**Undergraduate.** North Carolina currently provides for four types of teacher certification based upon the completion of approved baccalaureate degree programs: Early Childhood (kindergarten through fourth grade), Intermediate (grades four through six), Middle Grades (grades six through nine), and Secondary (grades nine through 12). Students selecting Early Childhood, Intermediate and Middle Grades Certification major in Education whereas those who select Secondary Certification major in academic disciplines within the College of Arts and Sciences. North Carolina also provides special subjects certification (kindergarten through grades 12) in certain teaching fields such as art, dance, and special education. Students seeking certification in art or dance major in the appropriate area in the College of Arts and Sciences.

# Department of Curriculum and Instruction

*Acting Chairperson:* Professor Britt
*Professor:* Sud
*Associate Professors:* Calhoun, Clark, Green, Gretes, Hoyle, Jaus, Mork, Roberts, Rose, Schaffer
*Assistant Professors:* Beattie, Conwell, Passe, Whaley, White, Wolfe, Wood
*Clinical Professors:* Spooner, Test
*Lecturers:* Harrison, Sapp

The Department of Curriculum and Instruction offers programs leading to the Bachelor of Arts and the Master of Education degrees with undergraduate and graduate teaching certification. Course work leading to teacher certification at the secondary level is offered for students majoring in programs offered by the College of Arts and Sciences. The Certificate of Advanced Study (sixth year) is offered in five areas. (See pages 369-377 regarding the graduate programs.)

More than ever, the teaching profession offers college graduates exciting opportunities and challenges. The undergraduate teacher education programs offered by the Department provide the first crucial step in career development to become teachers at grades K-4 (early childhood), 4-6 (intermediate), 6-9 (middle grades), 9-12 (secondary), or K-12: Special Education or English as a Second Language. For all these types of certification, the Department offers course work and clinical experiences to prepare students to identify learner needs, design curricula, develop instructional materials, and use effective teaching practices.

Students receiving certification in the K-4, 4-6, 6-9, and K-12: Special Education and TESL receive the Bachelor of Arts degree with a major in education or an appropriate discipline in Arts and Sciences. Students preparing for secondary (grades 9-12) certification must major in a discipline in Arts and Sciences and complete certification requirements in the Department of Curriculum and Instruction.

## BACHELOR OF ARTS

Each program leading to the B.A. degree in Education includes the following requirements:

**I. General Studies Component**
The general education component meets general education requirements of The University and is intended to provide a foundation for preparation in the student's area of specialization, to support the professional studies component, and to provide the student with the knowledge and skills generally needed by educated persons. This foundation is designed to include exposure to science, mathematics, creative arts, English, history and the social sciences, and health, physical education and safety.

**II. Professional Education Component**
The purpose of the professional education component is to provide the general professional competencies required of all teachers. This component provides for the development of knowledge and skill in understanding the role of the teacher and of education in our society, planning for instruction, classroom management, and the evaluation of pupil progress and instruction.

**III. Areas of Specialization Component**
The specialization component is intended to provide the prospective teacher with the skills and knowledge uniquely applicable to the particular level of certification sought. Each of the four specializations (K-4, 4-6, 6-9, 9-12) is differentiated in terms of the developmental stages of the children with whom the prospective teacher will be working as well as the knowledge of content that would qualify the teacher to provide instruction at those levels.

## THE PROFESSIONAL EDUCATION SEQUENCE

**Admission.** Students should obtain an application for formal admission to the teacher education program in the Department of Curriculum and Instruction before the end of the sophomore year. To be admitted to the professional education program the student must meet the following criteria:

1. An overall GPA of 2.25 and a minimum of 30 semester hours;
2. A grade of *C* or better in EDUC 2100;
3. Approval signatures from adviser(s), program coordinators, and department chairperson;
4. Scores of 636 and 631 respectively on Core I and II of the National Teacher Examination (NTE).

**Junior Year Transfer and Irregular Certification.** Students should follow the procedures outlined above and apply for admission to the professional education sequence during the first semester in which the student is enrolled at UNCC.

**Retention in Professional Education Sequence.** Retention in the teacher education program is contingent upon the student's maintenance of the following criteria:

1. A GPA of 2.75 or better in professional education courses and a GPA of 2.75 in the area of specialization.
2. A grade of *C* or better in all professional education courses and the area of specialization.
3. An overall GPA of 2.5 or above.

## REQUIREMENTS FOR CERTIFICATION PROGRAMS

**Elementary Education.** This program is designed for students who intend to become teachers at the elementary school level by seeking certification in Early Childhood (K-4) or Intermediate (4-6) education. Degree requirements include 30 semester hours of professional studies, a 34 semester hour area of specialization, 12 to 15 semester hours of electives, and satisfaction of 52 semester hours of general studies requirements at the K-4 level and 55 semester hours of general studies requirements at the 4-6 level.

**Middle Grades Education.** This program is designed for students who intend to become teachers at the sixth through the ninth grade levels and seek middle grades certification in two of the following areas of concentration: communication skills, mathematics, science, social studies. Degree requirements for students majoring in education include 41 hours of general studies; 27 hours of professional studies, 10 hours in the area of specialization and 24-27 hours in each of the concentrations. Students majoring in a discipline in Arts and Sciences must complete these requirements and satisfy the requirements for their major.

**Secondary Education.** This sequence of course work is designed for students in the College of Arts and Sciences who intend to become teachers at the ninth through twelfth grade levels and seek certification in an academic field. In addition to the major teaching field requirements, certification requirements include 27 hours of professional studies and 15 hours of course work in the secondary specialization.

## ADMISSION TO STUDENT TEACHING

Following are criteria for admission to student teaching. A student must have:

1. The recommendation of his/her advisers.
2. Completed prerequisite general studies, professional studies, and area of specialization requirements.
3. A GPA of 2.75 or above in the area of specialization.
4. A GPA of 2.75 or above in the professional studies sequence.
5. An overall GPA of 2.50 or above.
6. Senior status with grades of *C* or above in all courses required for certification.

**Additional Certification.** Additional certification may be obtained in English as a Second Language or Special Education. Either certification program must be added to one of the degree programs described above.

*Requirements for English as a Second Language:* The student will complete a 21-hour professional preparation sequence: Part I: Foundations (12 hours), ENGL 2132, 4263, and 4166, and one course from the following: ENGL 4165, ANTH 4120, ANTH 4090, or FORL 4200; Part II: Professional Skills and Content (six hours), EDUC 5101 and 5103; and Part III: Student Teaching (3 hours).

*Requirements for Special Education:* Students will complete a program of study leading to teacher certification in Mental Handicaps (K-12). Students should consult with their advisers. (SPED 3160, 3170, 3180, 3190, 3490, 5130 and PSYC 5153 are required.)

## SAMPLE SCHEDULE
## ELEMENTARY EDUCATION PROGRAM
## K-4 EARLY CHILDHOOD CERTIFICATION
**(131 Semester Hours)**

**First Semester**

| | |
|---|---|
| ENGL 1101 (GOAL I) | 3 |
| BIOL 1110 + L (GOAL IV) | 4 |
| GEOG 1101 (GOAL VI: X) | 3 |
| POLS 1101 (GOAL I: W) | 3 |
| Elective | 3 |
| | 16 |

**Second Semester**

| | |
|---|---|
| ENGL 1102 (GOAL I) | 3 |
| ESCI 1101 + L (GOAL IV) | 4 |
| HIST 1160 or 1161 | 3 |
| PSYC 1101 (GOAL IV) | 4 |
| SOCY 1101 (GOAL III) | 3 |
| | 17 |

**Third Semester**

| | |
|---|---|
| PSYC 2109 | 3 |
| †Creative Arts | 3 |
| MAED 2101 (GOAL II) | 4 |
| EDUC 2100 | 3 |
| EDUC 2110 | 3 |
| | 16 |

**Fourth Semester**

| | |
|---|---|
| EDUC 2150 (GOAL VI: C) | 3 |
| †Creative Arts (GOAL V: A) | 3 |
| MAED 2102 (GOAL II) | 4 |
| Elective | 3 |
| SPED 3160 | 3 |
| | 16 |

**Fifth Semester**

| | |
|---|---|
| CHFD 3115 (K-4)* | 3 |
| EDUC 3100 (K-4)* | 3 |
| PHYS 1150 | 4 |
| EDUC 3150 + L | 4 |
| MAED 2103 | 3 |
| | 17 |

**Sixth Semester**

| | |
|---|---|
| HPED 3233 | 3 |
| READ 3151 (K-4)* (GOAL I: W) | 3 |
| EDUC 3151 + L | 4 |
| ENGL 3103 or 3104 | 3 |
| EDUC 3120 | 3 |
| Elective | 2 |
| | 18 |

**Seventh Semester**

| | |
|---|---|
| HLED 3101 | 3 |
| EDUC 3152 + L (GOAL I: W) | 4 |
| NC History (HIST 3295 or 3296) | 3 |
| ECON 5102 | 3 |
| Electives | 6 |
| | 19 |

**Eighth Semester**

| | |
|---|---|
| EDUC 3460 | 12 |
| | 12 |

†See adviser for a listing of Creative Arts courses.
*K-4 section only.

**Note:** Students need to see their advisers regarding changes in general education requirements.

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## SAMPLE SCHEDULE
## ELEMENTARY EDUCATION PROGRAM
## 4-6 INTERMEDIATE CERTIFICATION
## (131 Semester Hours)

**First Semester**

| | |
|---|---|
| ENGL 1101 (GOAL I) | 3 |
| BIOL 1110 + L (GOAL IV) | 4 |
| GEOG 1101 (GOAL VI: X) | 3 |
| HIST 1000, 1120, or 1121 (GOAL VI: X) | 3 |
| SOCY 1101 | 3 |
| | 16 |

**Second Semester**

| | |
|---|---|
| ENGL 1102 (GOAL I) | 3 |
| ESCI 1101 + L (GOAL IV) | 4 |
| POLS 1101 (GOAL I: W) | 3 |
| Elective | 3 |
| PSYC 1101 + L (GOAL IV) | 4 |
| | 17 |

**Third Semester**

| | |
|---|---|
| PSYC 2109 | 3 |
| HIST 1160 or 1161 | 3 |
| MAED 2101 (GOAL II) | 4 |
| EDUC 2100 | 3 |
| EDUC 2110 | 3 |
| | 16 |

**Fourth Semester**

| | |
|---|---|
| EDUC 2150 (GOAL VI: C) | 3 |
| †Creative Arts (GOAL V: A) | 3 |
| MAED 2102 (GOAL II) | 4 |
| Elective | 3 |
| SPED 3160 | 3 |
| | 16 |

**Fifth Semester**

| | |
|---|---|
| CHFD 3115 (K-4)* | 3 |
| EDUC 3100 (K-4)* | 3 |
| PHYS 1150 | 4 |
| EDUC 3150 + L | 4 |
| †Creative Arts | 3 |
| | 17 |

**Sixth Semester**

| | |
|---|---|
| PHED 3233 | 3 |
| READ 3151 (K-4)* (GOAL I: W) | 3 |
| EDUC 3151 + L | 4 |
| ENGL 3103 or 3104 | 3 |
| Elective | 2 |
| EDUC 3120 | 3 |
| | 18 |

**Seventh Semester**

| | |
|---|---|
| HLED 3101 | 3 |
| EDUC 3152 + L (GOAL I: W) | 4 |
| NC History (HIST 3295 or 3296) | 3 |
| ECON 5102 | 3 |
| MAED 2103 | 3 |
| Elective | 3 |
| | 19 |

**Eighth Semester**

| | |
|---|---|
| EDUC 3470 | 12 |
| | 12 |

†See adviser for a listing of Creative Arts courses.
*K-4 section only.

**Note:** Students need to see their advisers regarding changes in general education requirements.

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## SAMPLE SCHEDULE FOR MIDDLE GRADES PROGRAM TRACK

**First Semester**

| | |
|---|---|
| ENGL 1101 (GOAL I: W) | 3 |
| BIOL 1110 + L (GOAL IV) | 4 |
| HIST 1160 or 1161 (GOAL VI: C) | 3 |
| MATH 1103 (GOAL II) | 3 |
| POLS 1101 (GOAL I: W) | 3 |
| | 16 |

**Second Semester**

| | |
|---|---|
| ENGL 1102 (GOAL I: W) | 3 |
| ESCI 1101 + L (GOAL IV) | 4 |
| Creative Arts (GOAL V: A) | 3 |
| MATH 1222 (GOAL II) | 3 |
| GEOG 1101 (GOAL VI: X) | 3 |
| | 16 |

**Third Semester**

| | |
|---|---|
| PSYC 1101 (GOAL IV) | 3 |
| EDUC 2100 | 3 |
| Concentration I | 12 |
| | (15-18) |

**Fourth Semester**

| | |
|---|---|
| PSYC 2109 | 3 |
| HLED 2101 | 3 |
| COMM 1101 or EDUC 1110 | 3 |
| Concentration I or II | 9 |
| | 18 |

**Fifth Semester**

| | |
|---|---|
| EDUC 2110 | 3 |
| SPED 3160 | 3 |
| Concentration I or II | 9-12 |
| | (15-18) |

**Sixth Semester**

| | |
|---|---|
| EDUC 3186 | 3 |
| EDUC 3185-3185L | 4 |
| EDUC 3120 | 3 |
| Concentration I-II | 6 |
| | 16 |

**Seventh Semester**

| | |
|---|---|
| READ 5250 | 3 |
| Concentration I or II (including Methods) | 15 |
| | 18 |

**Eighth Semester**

| | |
|---|---|
| EDUC 3480 | 12 |
| | 12 |

**Note:** Students need to see their advisers regarding changes in general education requirements.

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## SAMPLE SCHEDULE FOR SPECIAL EDUCATION PROGRAM K-12 CERTIFICATION (131 Semester Hours)

**First Semester**

| | |
|---|---|
| ENGL 1101 (GOAL I: W) | 3 |
| BIOL 1110 + L (GOAL IV) | 4 |
| HIST 1160 or 1161 (GOAL VI: C) | 3 |
| SOCY 1101 (GOAL III) | 3 |
| MUSC 1132 or THEA 1101 (GOAL V: A) | 3 |
| | 16 |

**Second Semester**

| | |
|---|---|
| ENGL 1102 (GOAL I: W) | 3 |
| ESCI 1101 + L (GOAL IV) | 4 |
| GEOG 1101 (GOAL VI: X) | 3 |
| PSYC 1101 + L (GOAL IV) | 4 |
| Elective | 3 |
| | 17 |

**Third Semester**

| | |
|---|---|
| MAED 2101 (GOAL II) | 4 |
| EDUC 2100 | 3 |
| ARTS 2170 | 3 |
| EDUC 2150 (GOAL VI: C) | 3 |
| CHFD 3115 | 3 |
| | 16 |

**Fourth Semester**

| | |
|---|---|
| MAED 2102 (GOAL II) | 4 |
| SPED 3160 | 3 |
| ECON 5102 | 3 |
| EDUC 2110 | 3 |
| Elective | 3 |
| | 16 |

**Fifth Semester**

| | |
|---|---|
| PSYC 2109 | 3 |
| SPED 5130 | 3 |
| EDUC 3120 | 3 |
| SPED 3190 | 3 |
| SPED 3165 | 3 |
| PSYC 5153 | 3 |
| | 18 |

**Sixth Semester**

| | |
|---|---|
| SPED 3170 | 3 |
| SPED 3180 | 3 |
| PHED 3200 | 3 |
| READ 3151 | 3 |
| Electives | 6 |
| | 18 |

**Seventh Semester**

| | |
|---|---|
| SPED 5120 | 3 |
| SPED 4110 | 3 |
| ENGL 3103 | 3 |
| MAED 2103 | 3 |
| HLED 3101 | 3 |
| Elective | 3 |
| | 18 |

**Eighth Semester**

| | |
|---|---|
| SPED 3490 | 12 |
| | 12 |

**Note:** Students need to see their advisers regarding changes in general education requirements.

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

### EDUCATION (EDUC)

**Courses for Undergraduates**

(110) (220) **EDUC 1110. Communication Skills and Processes. (3)** Communication theory; analysis and application of inter- and intra-personal communications strategies. *(Fall, Spring) (Evenings)*

(240) **EDUC 1140. Learning Skills Instruction: Theory, Practice and Application. (3)** Development of both knowledge of and performance in the learning skills necessary for successful academic performance. Emphasis on learning principles and other factors important in skills development; motivation and goal setting; application of skills in academic settings. *(Fall, Spring)*

(200) **EDUC 2100. Introduction to Education. (3)** Comprehensive introduction to the profession of teaching which surveys the social, historical, and philosophical foundations of the educating professions, the organization and various levels of education, and the major issues in American education. *(Fall, Spring, Summer) (Evenings)*

(210) (340) **EDUC 2110. Instructional Design and Evaluation. (3)** Prerequisite: sophomore status. Corequisites: EDUC 2100 and PSYC 2109. Setting goals and objectives for instruction, planning activities and evaluation based on objectives with emphasis on writing cognitive, social, affective, and psychomotor objectives using an accepted system, and developing teacher made and other types of classroom tests. *(Fall, Spring, Summer) (Evenings)*

(250) **EDUC 2150. Human Development Across the Life Span. (3)** Biological, psychological and social development throughout the life span. *(Fall, Spring, Summer) (Evenings)*

**Courses for Advanced Undergraduates**

(300) (485) **EDUC 3100. Elementary School Curriculum. (3)** Prerequisites: EDUC 2100, PSYC 2109, SPED 3160. Corequisites: EDUC 3120, 3151 and L. Curricular planning and development skills with emphasis on designing and implementing integrated activities, developing individualized materials, and study of the nature and function of elementary schools. *(Fall, Spring, Summer) (Evenings)*

(320) (440) **EDUC 3120. Analysis of Teaching and Research. (3)** Prerequisites: EDUC 2100 and 2110, PSYC 2109, and junior status. Corequisites: EDUC 3100 and 3150. Practices that conceptualize, measure and improve classroom performance and management with emphasis on various organizational patterns and practices, different approaches to instruction and their impact on student learning, and adapting and evaluating teacher behavior in specific contexts and grade levels. Concrete instruments for evaluation of on-site observations of school programs will be used. *(Fall, Spring) (Evenings)*

(350) **EDUC 3150. Science in the Elementary School. (4)** Prerequisites: BIOL 1110 and ESCI 1101 and junior status. Corequisite: PHYS 1150. Methods course for orientation to teaching strategies and materials appropriate for teaching science in grades K-6. Emphasis on using science content to develop effective science learning experiences for elementary school children. Field experience included as a one-hour lab. *(Fall, Spring)*

(351) **EDUC 3151. Language Arts in the Elementary School. (4)** Prerequisites: ENGL 1101, 1102. Corequisites: READ 3151; ENGL 3103 or 3104. Methods course for orientation to the teaching of Language Arts in grades K-6. Emphasis on methods for teaching English grammar, spelling, writing, listening, and speaking. Field experience included as a one-hour lab. *(Fall, Spring)*

(352) **EDUC 3152. Social Studies in the Elementary School. (4)** Prerequisites: 12 hours of social science and history; junior status. Corequisites: N.C. History and ECON 5102. Methods course for orientation to teaching strategies and materials for teaching social studies in grades K-6. Emphasis on using social science content to develop effective social studies instruction for elementary school children. Field experience included as one-hour lab. *(Fall, Spring)*

(382) **EDUC 3182. Methods and Management for Teaching Social Studies. (3)** Prerequisite: EDUC 3152; concentration in social studies. Preparation to teach social studies at the middle grades and secondary levels. Emphasis on teaching concepts from history and the social sciences. *(Yearly)*

(385) **EDUC 3185. Middle Grades Education. (3)** Prerequisite: junior status. Corequisite: EDUC 3185L. Comprehensive overview of education in the middle grades (6-9) with emphasis on the foundational components, organizational patterns, instructional programs and management techniques unique to the middle grades. *(Fall)*

(385L) **EDUC 3185L. Middle Grades Teaching Laboratory. (1)** Prerequisite: junior status. Corequisite: EDUC 3185. Participation in middle grades instructional settings. *(Fall)*

(386) **EDUC 3186. Middle Grades Children. (3)** Prerequisites: PSYC 2109, EDUC 2100, junior status. Physical, social, cognitive and affective developmental factors which influence growth and achievement of 11 to 14-year-old students in grades 6-9. *(Fall)*

(395) **EDUC 3195. Secondary Education. (3)** Prerequisites: EDUC 2100 and 2110; junior status. Comprehensive overview of secondary education with emphasis on the foundational components, instructional programs, and management techniques unique to grades 9-12. *(Spring)*

(396) **EDUC 3196. Secondary School Students. (3)** Prerequisites: PSYC 2109, EDUC 2100, junior status. Physical, social, cognitive and affective developmental factors which influence growth and achievement of 14- to 18-year-old students in grades 9-12. *(Spring)*

(460) **EDUC 3460. Student Teaching Grades K-4. (12)**
(486)

(470) **EDUC 3470. Student Teaching Grades 4-6. (12)**
(487)

(480) **EDUC 3480. Student Teaching Grades 6-9. (12)**

(490) **EDUC 3490. Student Teaching Grades 9-12. (12)**

**Student Teaching Courses.** Prerequisites: approved application for student teaching; completion of general studies, professional studies, and specialization requirements; a GPA of 2.75 in major, 2.75 in professional studies, and 2.50 overall. Grade of *C* or better in all professional education courses. Program of experiential learning activities in the student's area of specialization conducted in an approved school setting under the supervision and coordination of University faculty and school personnel. Emphasis on development of competencies in the areas of planning, evaluating, instructing, managing instruction, providing the learning environment, and professionalism, and in examination of strategies for developing a personal teaching/learning style. Opportunities to demonstrate the above skills are provided in appropriate grade level settings. *(Fall, Spring)*

(472) **EDUC 3800. Individual Study in Education. (1-6)** Prerequisite: permission of the student's adviser and an appropriate individual study director. Designed to allow a student to pursue individual goals under the supervision of an appropriate faculty member. May be repeated for credit. *(On demand)*

ADVANCED UNDERGRADUATES MAY TAKE 5000-LEVEL EDUCATION COURSES FOR UNDERGRADUATE CREDIT. FOR COMPLETE COURSE DESCRIPTIONS SEE PAGE 372.

## READING (READ)

(351) **READ 3151. Reading and Language Development. (3)** Prerequisite: EDUC 2100. Corequisites: EDUC 3151 and ENGL 3103 or 3104. Reading process and reading instruction; relationship between language development and reading; field-based application of course content. K-4 and 4-6 sections. *(Fall, Spring)*

ADVANCED UNDERGRADUATES MAY TAKE 5000-LEVEL READING COURSES FOR UNDERGRADUATE CREDIT. FOR COMPLETE COURSE DESCRIPTIONS SEE PAGE 375.

(360) **SPED 3160. Developmental Exceptionalities. (3)** Survey of human exceptionality, including exceptionally gifted and those with developmental disabilities and handicaps. *(Fall, Spring, Summer) (Evenings)*

(370) **SPED 3170. Special Education Assessment. (3)** Prerequisite: SPED 3160. An overview of the fundamental concepts in educational assessment of exceptional students. Emphasis is placed upon the utility and limitations of various assessment procedures. Standardized, criterion-referenced, and informal measures will be discussed. Additionally, multi-disciplinary process and Individualized Education Plan (IEP) development will be covered. *(Spring)*

(380) **SPED 3180. Special Education Methods and Materials: Elementary Level. (3)** Prerequisite: SPED 3160. An overview of curriculum instructional methods and materials which are used with learners with special needs at the elementary level. *(Spring)*

(390) **SPED 3190. Special Education Methods and Materials: Secondary Level. (3)** Prerequisite: SPED 3160. Designed to provide students with knowledge regarding instructional methods, materials, and curriculum for mentally handicapped students in secondary level classrooms. *(Fall)*

**SPED 3490. Student Teaching: Special Education Grades K-12. (12)** Prerequisites: approved application for student teaching; completion of general studies, professional studies, and specialization requirements; a GPA of 2.75 in major, 2.75 in professional studies, and a 2.50 overall. Grade of *C* or better in all professional education courses. Program of experiential learning activities in approved special education settings under the supervision and coordination of University faculty and school personnel. Emphasis on development of competencies in the areas of planning, evaluating, selecting and implementing instructional strategies to facilitate learning in exceptional children, working in consultation with parents and professionals. Seminars are held to facilitate professional skill development. *(Fall, Spring)*

ADVANCED UNDERGRADUATES MAY TAKE SPED 5130 FOR UNDERGRADUATE CREDIT. FOR A COMPLETE COURSE DESCRIPTION SEE PAGE 375.

# Department of Health and Physical Education

*Chairperson:* Professor Murphy
*Associate Professors:* Berne, Bostian, Healey, Tillotson
*Assistant Professors:* Shantzis, Wright
*Lecturers:* Avant, Bowman, Fielding, Warming

A primary objective of the Department of Health and Physical Education and its activity and lecture/laboratory courses is to enable students to plan, implement and maintain a healthy lifestyles program based on knowledge and skills supported by evidence resulting from scientific inquiry. The Department offers a broad range of activity and lecture/laboratory courses in health and physical education.

The **Athletic Training Specialty** affords students an opportunity to prepare to become athletic trainers. Students who receive certification may find career opportunities in a number of settings including schools, colleges, medical clinics, professional sports teams and commercial health promotion agencies.

On the graduate level, the Department offers a Health Education track in the Curriculum and Instruction program leading to the Master of Education degree. It includes a School Health option for teachers and an option in Health Promotion to prepare leaders in business and industry, agency, commercial and medical-center operated health promotion programs.

## ATHLETIC TRAINING ENDORSEMENT

The Athletic Training Endorsement is a 24-credit-hour concentration in the prevention and treatment of athletic injuries. The emphases of the curriculum are emergency medical care in the absence of medical personnel, taping techniques, the recognition of injuries, and methods and modalities of injury rehabilitation under the guidance of physicians. Students are given opportunities to gain knowledge and skills basic to passing the written and clinical exams of the National Athletic Trainers Association (NATA), and the hours supervised by certified athletic trainers and physicians in both credit and non-credit clinical apprenticeships count toward the 1,800 clinical hours required for eligibility to take the certification examinations given at central sites by NATA. Required courses are CHEM 1103 and 1103L; BIOL 1273 and 1273L; PHED 1284L, 2290, 3284, 3290, 3291 and 3292.

## COURSE DESCRIPTIONS

### HEALTH EDUCATION (HLED)

Students who desire more information about the courses may review course outlines in the Department of Health and Physical Education.

(201) **HLED 2101. Healthy Lifestyle. (3)** A health survey course with emphasis on health behavior, decision-making and knowledge. *(Fall, Spring, Summer)*

(200) **HLED 2200. Secondary School (Grades 6-12) Health, Physical Education and Safety. (3)** Prerequisite or corequisite: EDUC 2100. Provides the preservice teacher with the curricular content of health, physical education and safety in grades 6-12. Focuses on the value of knowledge, positive attitudes, skills development and lifestyle related to health, physical education and safety. *(On demand)*

(301) **HLED 3101. Health Education in the Elementary School. (3)** Prerequisites: junior standing and EDUC 2100, 2110 and 2150. A methods course designed for the elementary specialist as an orientation to content, curriculum and methods appropriate for teaching health education in grades K-6. *(Fall, Spring, Summer)*

### PHYSICAL EDUCATION (PHED)

Students who desire more information about the courses may review course outlines in the Department of Health and Physical Education.

**Courses for Undergraduates**

(101) **PHED 1201. Foundations of Physical Conditioning. (1)** The application and basic science of physical training programs designed to improve and maintain physical fitness. *(Fall, Spring)*

(102) **PHED 1202. Weight Training. (1)** Mechanics and programming of weight training. *(Fall, Spring, Summer)*

(103) **PHED 1203. Fencing. (1)** The skills and rules of the sport of fencing. *(Spring)*

(104) **PHED 1204. Aerobic Dance. (1)** Exercise sequences and dance patterns performed to music and designed to improve general physical fitness. *(Fall, Spring)*

(106) **PHED 1206. Adaptive and Developmental Physical Education. (1)** Prerequisite: permission of the instructor. Prescribed ameliorative exercises adapted to individual needs, capacities and interests. Primarily designed for the individual with anatomical and functional defects. *(Fall, Spring)*

(110) **PHED 1210. Beginning Swimming. (1)** For weak swimmers or nonswimmers. Instruction in water safety fundamentals, basic body positioning, maneuvering in water, and traveling skills, including basic strokes. *(Fall, Spring)*

(111) **PHED 1211. Intermediate Swimming. (1)** Emphasis on gaining competency in at least four basic strokes and increasing endurance. *(Fall, Spring)*

(120) **PHED 1220. Beginning Tennis. (1)** The rules, basic skills and strategy. *(Fall)*

**PHED 1222. Racquet Sports. (1)** Basic skills, tactics, safety and rules of racquetball, court and table tennis, squash and badminton. *(Fall, Spring)*

(123) **PHED 1223. Beginning Badminton. (1)** The rules, basic skills and strategy. *(Fall)*

(125) **PHED 1225. Beginning Handball. (1)** The rules, basic skills and strategy.

(140) **PHED 1240. Beginning Golf. (1)** The grip, stance, stroke, use and selection of clubs, rules and etiquette. *(Fall, Spring)*

(142) **PHED 1242. Archery. (1)** The fundamental skills and selection, care and repair of equipment. *(Fall)*

(150) **PHED 1250. Volleyball. (1)** The rules, fundamental skills and strategies. *(Fall, Spring)*

(160) **PHED 1260. Gymnastics. (1)** The fundamental skills of gymnastics at the beginning level. *(Fall, Spring)*

(374L) **PHED 1284. Athletic Training Taping Techniques. (1)** Corequisite or prerequisite: PHED 2290 and 3284. Instruction and practice in the application of adhesive and elastic strapping. *(Fall)*

**PHED 2200. Physical Fitness for Modern Lifestyles. (3)** Prerequisite or corequisite: PHED 1201, 1202 or 1204. Study of health-related physical fitness and instruction in the development and maintenance of optimal fitness levels for modern lifestyles. Includes activity and classroom sessions. *(Yearly)*

(212) **PHED 2212. Advanced Lifesaving. (2)** Prerequisite: PHED 1211 or instructor's permission. The science and skills associated with lifesaving. Qualifying students will receive the American Red Cross Advanced Lifesaving Certificate. One hour lecture and two hours laboratory each week. *(Fall, Spring)*

(213) **PHED 2213. Water Safety Instruction. (3)** Prerequisite: current American Red Cross Advanced Lifesaving Certification. Techniques used in teaching people aquatic skills. Qualifying students will receive the American Red Cross Water Safety Instructor's rating. *(Spring)*

(219) **PHED 2219. Scuba Diving. (3)** Prerequisite: appropriate swimming ability relative to current SCUBA standards as prescribed by recognized SCUBA certifying bodies. The science and skills associated with the use of self-contained underwater breathing apparatus. Students who demonstrate the required qualities may request certification as an open water SCUBA diver. *(Fall, Spring, Summer)*

(220) **PHED 2220. Advanced Scuba Diving. (1)** Prerequisite: Certified Open Water Diver or certification as a Basic SCUBA Diver with a minimum of ten logged dives. The knowledge and skill required for underwater navigation, search and recovery, limited visibility diving and deep diving. The student will be required to go on two weekend-long open water dives. Advanced Open Water Diver Certification will be granted to students who qualify. *(Fall, Spring)*

(352) **PHED 2251. Introduction to Human Movement: A Personal Approach. (3)** Selected methods of observing and analyzing human movement via self-observation and study. *(Fall)*

(361) **PHED 2252. Introduction to Movement Education. (3)** Study of movement as the content of physical education. *(On demand)*

(373) **PHED 2260. Leadership and Organization in Coaching. (3)** Study and practice of leadership and organization as it relates to coaching. *(On demand)*

(270A) **PHED 2270. Fundamentals of Basketball. (3)** Identification, study and practice of the skills fundamental to basketball performance. *(Fall)*

(270B) **PHED 2271. Fundamentals of Baseball. (3)** Identification, study and practice of the skills fundamental to baseball performance. *(Fall)*

(270C) **PHED 2272. Fundamentals of Softball. (3)** Identification, study and practice of the skills fundamental to softball performance. *(Fall)*

(270F) **PHED 2273. Fundamentals of Football. (3)** Identification, study and practice of the skills fundamental to football performance. *(Spring)*

(270G) **PHED 2274. Fundamentals of Gymnastics. (3)** Identification, study and practice of the skills fundamental to gymnastics performance. *(Spring)*

(270Q) **PHED 2275. Fundamentals of Swimming. (3)** Identification, study and practice of the skills fundamental to swimming performance. *(Fall)*

(270S) **PHED 2276. Fundamentals of Soccer. (3)** Identification, study and practice of the skills fundamental to soccer performance. *(Spring)*

(270T) **PHED 2277. Fundamentals of Tennis. (3)** Identification, study and practice of the skills fundamental to tennis performance. *(Fall)*

(270V) **PHED 2278. Fundamentals of Volleyball. (3)** Identification, study and practice of the skills fundamental to volleyball performance. *(Spring)*

(270X) **PHED 2280. Foundations of Exercise Science. (3)** The science foundations of programming exercise for health fitness. *(Fall)*

(310) **PHED 2290. Emergency Medical Care. (3)** Knowledge and techniques for administering prompt and appropriate first aid and/or emergency medical care in situations where the services of qualified medical personnel are not available or are delayed. *(Fall, Spring, Summer)*

(402) **PHED 3099. Movement Problems/Topics. (1-6)** Prerequisite: consent of instructor. Movement problems/topics chosen by the student which relate to special areas of interest. May be repeated for credit with approval of instructor. *(Fall, Spring, Summer)*

(333) **PHED 3233. Movement Experiences for Elementary School Children. (3)** Prerequisites: EDUC 2100, 2110 and 2150. Study of movement and physical activities as applied in the elementary school program. *(Fall, Spring, Summer)*

(352) **PHED 3251. Human Movement. (3)** Prerequisite: PHED 2251 or permission of instructor. Analysis and application of basic movement in specific sport, dance, gymnastic and aquatic skills. *(Spring)*

(362) **PHED 3252. Movement Education Content Development and Instruction. (3)** Prerequisite/corequisite: PHED 2252 or permission of instructor. Theory and practice of movement education in elementary school. *(On demand)*

(371) **PHED 3281. Motivation and Behavior in Sport: An Overview. (3)** Psychological aspects of sport and the effects of motivational and behavioral factors on sport performance. *(On demand)*

(374) **PHED 3284. Sports Injury Prevention and Management. (3)** Prerequisites: PHED 2290 or consent of instructor. The study and practice of modern principles of the prevention and management of sports injuries. *(Fall)*

(375) **PHED 3285. Conditioning for Maximum Sports Performance. (3)** Prerequisite: PHED 2290 or consent of instructor. A study of biomechanical and physiological principles of conditioning for maximum sports performance. Two lecture and three laboratory hours each week. *(On demand)*

(380) **PHED 3290. Anatomical Structures and Athletic Injuries. (3)** Prerequisites: BIOL 1273 and 1273L; PHED 1284, 2290 and 3284. Anatomical structures and their relationship to the prevention and treatment of athletic injuries. *(On demand)*

(381) **PHED 3291. Therapeutic Modalities. (3)** Prerequisites: BIOL 1273 and 1273L; PHED 1284, 2290, 3284, and 3290. Methods and techniques of the application of selected therapeutic modalities and the evaluation of injuries relative to modalities. *(On demand)*

(382) **PHED 3292. Athletic Training Clinical. (3)** Prerequisites: BIOL 1273 and 1273L; PHED 1284, 2290, 3284, and 3290. Study and treatment of actual athletic injuries under the guidance of physicians and certified trainers. *(On demand)*

**Courses for Advanced Undergraduates and Graduate Students**

(504) **PHED 4204. Perceptual Motor Development. (3) (3G)** Theories, principles and research related to perceptual-motor development of children. *(On demand)*

(505) **PHED 4205. Perceptual Motor Learning. (3) (3G)** Prerequisite or corequisite: PHED 4204 or consent of instructor. Perceptual-motor learning of children and its effect on school performance and the relationships of perceptual-motor development to reading, writing and mathematics. *(On demand)*

(508) **PHED 4208. Perceptual Motor Therapy. (3) (3G)** Prerequisite: PHED 4205 or consent of the instructor. Observation of and evaluation and therapy for children with perceptual-motor dysfunctions. May be repeated for credit with approval of instructor. *(On demand)*

(510A) **PHED 4210. Perceptual Motor Therapy Laboratory. (1) (1G)** Prerequisites/corequisite: PHED 4204 or 4205 or 4208. *(Fall, Spring)*

(510B) **PHED 4211. Perceptual Motor Therapy Laboratory. (2) (2G)** Prerequisites/corequisite: PHED 4204 or 4208. *(Fall, Spring)*

(510C) **PHED 4212. Perceptual Motor Therapy Laboratory. (3) (3G)** Prerequisite/corequisite: PHED 4204 or 4205 or 4208. Supervised observation, testing and clinical teaching of children with perceptual-motor dysfunction. Course may be repeated for credit with approval of instructor. *(Fall, Spring)*

# Department of Human Services

*Chairperson:* Professor Burke
*Distinguished Professor:* Powers
*Professors:* McLeod, Rowland
*Associate Professors:* Barret, Robinson
*Assistant Professors:* Ammons, Furr, Nkomo, Shepard, Webb
*Clinical Assistant Professor:* Blackwell
*Adjunct Assistant Professors:* Coleman, Lynch, Newman, Spain
*Adjunct Lecturers:* Alexander, Lynch, Phillips, Restuccia

The Department of Human Services offers a skill-oriented curriculum which prepares students as professionals and paraprofessionals to serve individual or group needs in a variety of agency, business, educational or governmental settings. Two undergraduate programs are administered by the Department: Human Services, and Child and Family Development. On the graduate level, the Department administers the Counseling and Guidance Program, which provides training at the master's and sixth-year levels for counselors in school and community agency settings. (See pages 365-368 for more information about the Master of Human Development and Learning degree, the Master of Education degree, and the Certificate of Advanced Study.)

**Human Services.** The purpose of human services is to enhance individuals' personal and social well-being during the lifespan; to promote the healthy development of families and interfamily relationships; and to encourage the development of groups and communities. The Human Services major offers students a program of study designed to meet their personal interests and career goals, while they obtain broad-based knowledge and firsthand skills in the helping professions. Graduates of the program can expect to play a key role in social development as advocates for the disadvantaged, providers of preventive health care services, paraprofessionals who offer physical and emotional support, and knowledgable citizens who help shape their communities.

**Child and Family Development.** The Department offers both a major and a minor in the area of child and family development. Children are studied in their relationships within the family and the community, and knowledge from both the natural and social sciences is applied to the child — as an individual — in the many roles and settings in which children function in society. A primary goal of the Child and Family Development Program is to improve the quality of life for children and their families. Graduates of the program may become preschool teachers (in Headstart, nursery schools, or daycare), parenting education specialists, workers in family/child agencies, or teachers of developmentally delayed and disabled children. The program also prepares individuals to work with children and families in areas of scouting, YMCA and YWCA, churches and volunteer services. Graduates of the program are prepared to pursue graduate studies in child development.

## BACHELOR OF ARTS

**HUMAN SERVICES.** A major in Human Services leading to the B.A. degree consists of a minimum of 122 semester hours, including: at least 39 semester hours in Human Services, 18 semester hours in a related area of concentration, and fulfillment of general education requirements. The related concentration requirement may be fulfilled by one of the University minors or a thematic interdisciplinary minor or concentration (such as substance abuse, public relations in human services, aging, or volunteerism), jointly designed by the student and his/her adviser.

**CHILD AND FAMILY DEVELOPMENT.** A major in Child and Family Development leading to the B.A. degree requires both academic study and practical experience. The **UNCC Child Development Center** — a University-sponsored program for preschool children — offers experiential learning opportunities for both undergraduate and graduate students. The major consists of a minimum of 120 semester hours including: at least 39 semester hours in Child and Family Development with an average grade of *C;* 32 semester hours of general education requirements; and 18 semester hours of required related work to include six semester hours in other selected areas. The remaining 31 semester hours may be fulfilled by elective courses.

## CHILD AND FAMILY DEVELOPMENT MINOR

A minor in Child and Family Development is available to all undergraduates and consists of 18 semester hours to include CHFD 2111, 2113, 2115, 3115, and six semester hours of CHFD electives.

## RECOMMENDED CURRICULUM OUTLINE FOR THE HUMAN SERVICES MAJOR LEADING TO THE B.A. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| GOAL II | 3 | GOAL II | 3 |
| GOAL III | 3 | English 1102 | 3 |
| GOAL V: (A) | 3 | Foreign Language 1202 | 4 |
| English 1101 | 3 | HUSV 1100 | 3 |
| Foreign Language 1201 | 4 | GOAL IV | 4 |
| | 16 | | 17 |

### Sophomore Year

| | | | |
|---|---|---|---|
| GOAL IV | 4 | GOAL IV | 4 |
| GOAL I: (W) | 3 | Restricted HUSV Elective | 3 |
| GOAL V: (A) | 3 | Social Science Elective | 3 |
| Social Science | 3 | Health and PE Elective | 3 |
| | | Related Area of Concentration | 3 |
| | 16 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| HUSV 4115 | 3 | HUSV 3110 | 3 |
| GOAL I: (W) | 3 | HUSV 5103 or 5104 | 3 |
| Counseling 3101 | 3 | Health and PE Elective | 3 |
| Social Science Elective | 3 | Area of Concentration | 6 |
| Area of Concentration | 3 | (3 semester hours must be Social Science) | |
| | 15 | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| HUSV 3410 | 9 | HUSV 3416 | 9 |
| Area of Concentration | 6 | HUSV 3619 | 3 |
| | 15 | | 12 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## RECOMMENDED CURRICULUM OUTLINE FOR THE CHILD AND FAMILY DEVELOPMENT MAJOR LEADING TO THE B.A. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| English 1101 | 3 | English 1102 | 3 |
| Foreign Language 1201 | 4 | Foreign Language 1202 | 4 |
| GOAL II | 3 | HUSV 1110 | 3 |
| GOAL III | 3 | GOAL V: (L) | 3 |
| GOAL V: (A) | 3 | GOAL II | 3 |
| | 16 | | 16 |

### Sophomore Year

| | | | |
|---|---|---|---|
| Education 1110 | 3 | CHFD 2115 | 3 |
| CHFD 2111 | 3 | CHFD 2416 | 3 |
| CHFD 2412 | 3 | GOAL IV | 4 |
| GOAL IV | 4 | GOAL I: (W) | 3 |
| GOAL I: (W) | 3 | Elective | 3 |
| | 16 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| HUSV 4115 | 3 | Related Area (Sociology) | 3 |
| CHFD 3412 | 3 | Related Area (Elective) | 3 |
| CHFD 2113 | 3 | GOAL VI | 3 |
| GOAL VI | 3 | Related Area (Psychology) | 3 |
| Related Area (Psychology) | 3 | Elective | 3 |
| | 15 | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| CHFD 3115 | 3 | CHFD 3416: Internship | 6 |
| Related Area (Sociology) | 3 | CHFD 3619 | 3 |
| Related Area (Elective) | 3 | Elective | 3 |
| Electives | 5 | | |
| | 14 | | 12 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

### CHILD AND FAMILY DEVELOPMENT (CHFD)

**Courses for Undergraduates**

(311) **CHFD 2111. Child Study: Interpreting Children's Behavior. (3)** A focus on the growth of individuals and the forces which influence this growth. Current theories of child development with emphasis on the complex interaction between heredity and environmental factors. *(Fall)*

(313) **CHFD 2113. Infant and Early Years. (3)** Examination of development from its beginnings to early childhood with emphasis on theories, research and other data relative to infancy and the early years and implications for curriculum design. *(Fall, Summer)*

(315) **CHFD 2115. Education of the Young Child. (3)** Developmental needs of children as related to group care situations, curriculum decisions, and the design of early learning environments. Emphasis on current issues, the role of the caregiver (parent and/or teacher), and the process of guiding and teaching young children. (Designed to complement Practicum II.) *(Spring, Summer)*

(312) **CHFD 2412. Practicum I: Child Study: Observing and Recording Children's Behavior. (3)** Investigates the purposes and methods of observation of young children. Content includes observational activities, actual and simulated, individual and group. Students will observe, record, and analyze children's physical-motor, social, emotional, moral and cognitive development using developmental theory. (Designed as the Field Study for CHFD 2111.) *(Fall)*

(316) **CHFD 2416. Practicum II: The Child and the Community. (3)** A supervised practicum with placements in settings depicting care and educational learning experiences for children. Emphasis on program components, the evaluation and development of materials and practices for care and education. Students spend three half-days per week in placement. (Designed as the Field Study for CHFD 2115.) *(Spring)*

(415) **CHFD 3115. Learning and Development. (3)** Examination of the relationship of learning and development with emphasis on conceptualizing child development and interpreting data related to growth and development. Specific attention to the affective, cognitive and psychomotor domains and theories as seen in a multicultural context. *(Fall, Spring, Summer)*

(412) **CHFD 3412. Practicum III: The Family and the Community. (3)** Explores the nature of the family as a living, dynamic system within the larger system of society. Seeks to integrate current theories of family interaction, emerging family roles, and alternative patterns of family adjustment with practice in community settings. Students work in settings impacting on family life. *(Fall)*

(416) **CHFD 3416. Internship in Child and Family Development. (6)** An intensive program working with children and families in the field. The student, in consultation with the adviser, plans the scope and sequence of the internship experience. The focus is on the integration of theory and practice and is planned as a semester's assignment. *(Spring)*

(419) **CHFD 3619. Senior Seminar in Child and Family Development. (3)** A synthesizing course of study focusing on review, compilation, analysis and evaluation of the literature, research and experiences relevant to the student's area of focus. Students will present a plan of action/study for approval prior to registration for this semester. *(Spring)*

**CHFD 3800. Individual Study in Child and Family Development. (1-6)** Prerequisite: permission of the student's adviser and an appropriate individual study director. Designed to allow a student to pursue individual goals under the supervision of an appropriate faculty member. May be repeated for credit. *(Fall, Spring, Summer)*

### COUNSELING AND GUIDANCE (CSLG)

**Courses for Undergraduates**

(463) **CSLG 3101. Guidance: Behavior and Growth. (3)** Introduction to counseling with emphasis on understanding approaches and techniques for helping others make decisions directed toward solution of problems and facilitation of self-knowledge and growth. *(Fall, Spring)*

**Courses for Graduate Students and Advanced Undergraduates**

(556) **CSLG 5100. Counseling Needs of Women. (3) (3G)** Topics include women's development and needs, the problems they bring to counselors, strategies for helping with them, myths about women and biases in psychological research. *(Spring) (Alternate years)*

## HUMAN SERVICES (HUSV)

**Courses for Undergraduates**

**HUSV 1100. Exploration of Human Development. (3)** An introduction to the theories of major developmentalists and an interpretation into the reality of behavior. The course is designed to assist an individual to look at one's self and relationship to others. *(Fall, Spring)*

(400B) **HUSV 3101. Cultural and Scientific Impact. (3)** Interaction between the practice of science and its impact upon learning in modern culture. *(On demand)*

(420G) **HUSV 3102. The Adult Years. (3)** Biological and psychological development pertaining to maturation. *(On demand)*

(460) **HUSV 3110. Leadership Theory and the Dynamics of Group Processes. (3)** Examination of the dynamics of leadership behavior and group processes. Combines the theoretical and practical aspects of leadership through a variety of teaching/learning formats including small group laboratory methods. *(Spring)*

(470A) **HUSV 3410. Practicum in Human Services. (1-9)** In an agency setting, practicum provides an opportunity for the student to apply general theory to practical experience, professional and ethical issues, as well as skill building. *(Fall, Spring, Summer)*

(470B) **HUSV 3416. Internship in Human Services. (1-9)** In a setting specifically appropriate to his/her area of concentration, the student is involved in a variety of practices which further integrates experiential learning and a theory with emphasis on skill development. *(Fall, Spring, Summer)*

(470C) **HUSV 3619. Senior Seminar in Human Services. (3)** A synthesis, coordination and supplement to previous learning. Students share and evaluate their internship experiences and address specific topics that better prepare them for the job market. *(Fall, Spring)*

(472) **HUSV 3800. Individual Study in Human Services. (1-6)** Prerequisite: permission of the student's adviser and an appropriate individual study director. Designed to allow a student to pursue individual goals under the supervision of an appropriate faculty member. May be repeated for credit. *(Fall, Spring, Summer)*

**Courses for Advanced Undergraduates and Graduate Students**

(500) **HUSV 4115. Effective Human Systems. (3) (3G)** Systems approach to human development with emphasis on the need for coping skills which allow individuals to function effectively in various settings in life. *(Fall, Spring)*

**Courses for Graduate Students and Advanced Undergraduates**

(570) **HUSV 5000. Selected Topics in Human Services. (3-6) (3-6G)** Prerequisite: permission of the Department of Human Services. Seminars, independent study and clinical experiences. May be repeated for credit, with approval. *(Fall, Spring)*

**HUSV 5103. Substance Abuse: Primary Prevention. (3) (3G)** Primary prevention concepts, research, and programming and introduction to psychoactive drugs, their effects on the human physical function, intellectual perception, and psyche. *(Spring) (Evenings)*

**HUSV 5104. Substance Abuse: Approaches to Intervention and Treatment. (3) (3G)** Concepts of drug dependency and various approaches to intervention and treatment. *(Fall) (Evenings)*

# Air Force Aerospace Studies Area (Air Force ROTC)

*Associate Professor (Mil.):* Patrick
*Assistant Professors (Mil.):* Myers, Woods

The Air Force Reserve Officer Training Corps (AFROTC) program at The University of North Carolina at Charlotte provides two programs for students to qualify for a commission as a second lieutenant in the Air Force. The general objective of the Air Force program is to instill in each student a basic understanding of associated professional knowledge, a strong sense of personal integrity and individual responsibility, an appreciation of the requirements of national security, and an opportunity to learn and develop leadership ability. The 1100 and 2100 courses are available to all University students whether or not they wish to qualify for a commission.

**Four-Year Program.** The four-year program consists of classroom and laboratory work during the four undergraduate years and four weeks of field training, usually attended between the sophomore and junior years, at an airbase. During the first two years the program acquaints students with aerospace history, the mission and organization of the Air Force, including technological advances and current research and development activities. Students also begin leadership training. Students practice leadership talents and abilities by assuming positions of responsibility in the Cadet Corps.

**Two-Year Program.** All requirements for commissioning can be completed in the two-year program. Students may apply for entry if they intend to complete two more full academic years either *undergraduate, graduate* or a *combination of both.* Prior to formal enrollment, each student successfully completes six weeks of field training at an Air Force base. All students in the two-year program receive a tax free subsistence allowance of $100 a month.

## SCHOLARSHIP PROGRAM

Air Force ROTC awards scholarships at the freshman, sophomore and junior levels. They are available to qualified cadets in the two-year and four-year programs. Scholarships are given on a semester basis. The maximum is eight semesters (four years), the minimum four semesters (two years). Scholarships of seven, six and five semesters are also available.

Enrollment in the Aerospace Studies courses is a requirement for scholarship eligibility. Scholarships cover full tuition, laboratory expenses, incidental fees and books ($132.00 stipend per semester). Scholarship cadets also receive a tax-free subsistence allowance of $100 a month.

Four-year scholarships are also available to high school students. High school students interested in making application should write: Air Force ROTC (PA), Maxwell AFB, Alabama 36112 during their junior year or before December 1 of their senior year.

Air Force ROTC students who accept a scholarship must agree to successfully complete at least one semester of college instruction in a major Indo-European or Asian language before commissioning. Scholarship recipients are also required to successfully complete an English composition course prior to entry into the junior class.

## COMMISSION REQUIREMENTS

To be eligible for the Air Force ROTC advanced program (final two years) and commissioning, a student must be a citizen of the United States, physically qualified for commission in the Air Force, not under 14 years of age and, upon graduation, no more than 30 years of age. For those with prior military service, commissioning must occur not later than age 35.

In addition, cadets must pursue work leading to at least a bachelor's degree and be willing to sign a formal agreement at the beginning of the advanced course or upon initiation of a college scholarship. The agreement, an enlistment into the Air Force Reserve, obligates the student to remain in the ROTC program, accept a commission and serve the required period in the Air Force upon graduation. Additionally, cadets must demonstrate proficiency or successfully complete a course in mathematical reasoning before commissioning.

**Field Training.** Two Field Training courses are offered, either of which is to be completed during the summer between the sophomore and junior years. One covers a four-week period for students in the four-year program; the other covers six weeks and is designed for two-year program

applicants. Transportation, lodging, meals and approximately $150 per week are provided by the Air Force during Field Training.

**Leadership Laboratory.** Each cadet participates a minimum of one hour per week during every semester of enrollment. Leadership Lab is scheduled at one time only, every Thursday afternoon for the entire Cadet Corps. The objective is to provide a laboratory environment where each student receives an opportunity to learn and develop leadership and management abilities. Cadets plan, organize, and carry out the entire cadet program with only minimal guidance from the staff advisers.

## ADVANCED TRAINING PROGRAM

Students enrolled in the junior and senior years of AFROTC may volunteer to attend a two- or three-week orientation program at an Air Force base. This is an opportunity to observe and experience the working environment of an active Air Force facility and to obtain specific career information. Transportation, lodging, meals, and approximately $200 per week are provided by the Air Force during participation in this voluntary program.

## COURSE DESCRIPTIONS

(101) **AERO 1101. U.S. Air Force Today. (1)** A study of the doctrine, mission, and organization of the U.S. Air Force; a study of tactical and airlift forces, their mission, function, and employment. *(Fall)*

(101L) **AERO 1101L. U.S. Air Force Today. (0)** Leadership Lab. Corequisite: AERO 1101. *(Fall)*

(102) **AERO 1102. U.S. Air Force Today. (1)** A study of U.S. strategic offensive and defensive forces, aerospace support forces and a review of Army, Navy and Marine general purpose forces. *(Spring)*

(102L) **AERO 1102L. U.S. Air Force Today. (0)** Leadership Lab. Corequisite: AERO 1102. *(Spring)*

(201) **AERO 2101. Development of Air Power. (1)** An examination of the growth of airpower over the past 80 years by reviewing the various concepts of employment and focusing upon the factors that prompted research and technological change. *(Fall)*

(201L) **AERO 2101L. Development of Air Power. (0)** Leadership Lab. Corequisite: AERO 2101. *(Fall)*

(202) **AERO 2102. Development of Air Power. (1)** A continuation of AERO 2101 with emphasis on variety of events and elements in the history of airpower, especially where these provide significant examples of the impact of airpower on strategic thought. *(Spring)*

(202L) **AERO 2102L. Development of Air Power. (0)** Leadership Lab. Corequisite: AERO 2102. *(Spring)*

### Courses for Advanced Undergraduates

(301) **AERO 3101. Defense Administration and Military Management. (3)** Concepts of Air Force leadership. A study of the meaning of professional responsibilities of the professional officer, the foundation of the military profession, theories of leadership, discipline and human relations. *(Fall)*

(301L) **AERO 3101L. Defense Administration and Military Management. (0)** Leadership Lab. Corequisite: AERO 3101. *(Fall)*

(302) **AERO 3102. Leadership and Management. (3)** Concepts of Air Force management, including principles of and functions of management, Air Force personnel policies, channels of communication, problem solving, quantitative models and simulations, the command-staff team, the subordinate, performance standards, and Air Force controls. *(Spring)*

(302L) **AERO 3102L. Leadership and Management. (0)** Leadership Lab. Corequisite: AERO 3102. *(Spring)*

(401) **AERO 3201. The Changing Military Profession in a Democratic Society. (3)** American defense policy. The executive-legislative matrix of our national government is developed and compared with other governmental systems. An analysis of the role and function of professional military officers in a democratic society is stressed. *(Fall)*

(401L) **AERO 3201L. The Changing Military Profession in a Democratic Society. (0)** Leadership Lab. Corequisite: AERO 3201. *(Fall)*

(402) **AERO 3202. Strategy and the Policy Process. (3)** Continued development of the fundamentals presented in AERO 3201 with special emphasis on the role of the junior officer in implementing national policy decisions. Integrated into this curriculum is the development of communicative skills necessary for today's military officer. *(Spring)*

(402L) **AERO 3202L. Strategy and the Policy Process. (0)** Leadership Lab. Corequisite: AERO 3202. *(Spring)*

# Military Science Area (Army Reserve Officers' Training Corps)

*Professor (Mil.):* Diehl
*Assistant Professors (Mil.):* Howell, Ahrens, Chuber

Participation in Army ROTC enhances the education of both men and women by providing unique leadership and management training, along with practical experience in these areas. It helps students develop many of the qualities basic to success in the Army, or in civilian careers. Students earn a college degree and an officer's commission at the same time. The program is designed to complement the student's major area of study; participation in Army ROTC is compatible with all major areas of study. The Basic Course and the Advanced Course comprise the Military Science curriculum.

**Basic Course.** The Basic Course is usually taken during the freshman and sophomore years. It is open to all students and incurs no military obligation. Topics include management principles, leadership development, national defense organization, land navigation, small unit tactics, survival techniques, military courtesy, and physical training. Uniforms and textbooks are provided at no cost to students. Students unable to attend the Basic Course may still qualify for the Advanced Course by attending a paid six-week summer camp following their sophomore year. Placement credit is also available for veterans, members of the reserve components, and Junior ROTC participants.

**Advanced Course.** The Advanced Course provides instruction in military history, advanced tactics, techniques of effective leadership, and military ethics and professionalism. It is normally taken during the junior and senior years. Students successfully completing the Basic Course, who have demonstrated the potential to become officers and meet Army physical and academic standards, are eligible to enroll in the Advanced Course. Students receive a tax-free subsistence allowance of $100 per academic month and are required to attend a paid six-week summer camp at Fort Bragg, North Carolina, between their junior and senior years. In addition to Military Science courses, students must complete HIST 2120 American Military History (formerly MSCI 3202).

## NURSING SUMMER TRAINING PROGRAM

Nursing students enrolled in the Advanced Course may attend a paid Nursing Summer Training Program in lieu of the normal Advanced Camp. This program consists of one week of basic military skills training at Camp Perry, Ohio, followed by five weeks of practical hands-on nursing training at one of several major Army medical centers.

## SCHOLARSHIP PROGRAM

One-, two-, and three-year scholarships are awarded on a competitive basis, providing full tuition and educational fees, a specified amount for books and supplies, and a tax-free subsistence allowance of $100 per academic month. Students do not have to be enrolled in Army ROTC to apply and incur no obligation by applying. Application timeframe is December to February each year. Special consideration is given to students in nursing, engineering and physical sciences.

## COMMISSION REQUIREMENTS

To obtain a commission in the Army, Army National Guard, or Army Reserve, a student must successfully complete the Advanced Course, be recommended by the Professor of Military Science, and pursue work leading to at least a bachelor's degree.

## COURSE DESCRIPTIONS

### Courses for Undergraduates

(101) **MSCI 1101. Basic Course I. (1)** Introduction to ROTC and the U.S. Army including the rationale of the national defense structure and the mission and role of the Army. Introduction to modern theories of leadership and their application to today's environment. *(Fall, Spring)*

(102) **MSCI 1102. Basic Leadership Laboratory I. (1)** Practical work in basic military skills and physical ability development. Introduction to land navigation, drill and ceremony, communications, and the Army's standard individual weapons with emphasis upon team work and confidence building through participation in leadership activities. Three laboratory hours per week. *(Fall, Spring)*

(201) **MSCI 2101. Basic Course II. (2)** Introduction to map reading techniques, small unit tactics and the role of the junior officer in troop leading. First aid in a tactical environment will be surveyed. Three lecture hours per week. *(Fall, Spring)*

(202) **MSCI 2102. Basic Leadership Laboratory II. (1)** Emphasis upon developing proficiency in basic military skills with students assuming leadership roles when the class functions as a military unit. Assertive, confident leadership through knowledge and practice will be stressed. Three laboratory hours per week. *(Fall, Spring)*

(301) **MSCI 3101. Advanced Course I. (3)** Prerequisite: Basic Course or consent of the professor of military science. Introduction to the advanced ROTC area and an examination of branches of the Army, military teaching principles, management and small unit tactics, including refresher and advanced training in communications, drill and ceremonies, land navigation and physical fitness. Students must be successfully pursuing a commission in the Regular Army, Army Reserve or Army National Guard. *(Fall)*

(302) **MSCI 3102. Advanced Course II. (3)** Prerequisite: MSCI 3101. Designed specifically to prepare cadets for attendance at advanced camp with emphasis on mastering skills necessary to operate and maintain military equipment and developing self-confidence. *(Spring)*

(303) **MSCI 3103. Advanced Leadership Laboratory I. (1)** Prerequisite: MSCI 3101. Practical application and additional development of military skills and leadership principles with emphasis on mastery of all previous military skills with much of the training being performance oriented. Students develop their leadership by rotating through various leadership positions during the conduct of their training. Three laboratory hours per week. *(Spring)*

(401) **MSCI 3201. Advanced Course III. (3)** Prerequisite: MSCI 3102. Examination of staff organization procedures and purpose including a detailed analysis of the total Army concept (Regular Army, Army Reserve, National Guard). Practical application of military briefing techniques and examination of the relationship of the Army officer and society through a survey of military history. *(Fall)*

(403) **MSCI 3203. Advanced Leadership Laboratory II. (1)** Prerequisite: MSCI 3201. Extensive practical work in military planning and instructional techniques and special emphasis upon development of applied leadership skills necessary as a commissioned officer. Three laboratory hours per week. *(Spring)*

# College of Engineering

*Dean:* Professor Snyder
*Associate Dean:* Professor Evett

The College of Engineering offers baccalaureate degree programs in engineering, engineering technology, and computer science. On the graduate level, the College offers programs leading to Master's degrees in engineering and computer science, and, in cooperation with North Carolina State University, a program leading to the Ph.D. degree in engineering. For more information regarding graduate programs in engineering, see the Graduate School section of this *Catalog*.

The College comprises the Departments of Civil Engineering, Electrical Engineering, Mechanical Engineering and Engineering Science, Engineering Technology, and Computer Science.

The engineering programs offer professional engineering education to prepare students for careers as professional engineers and researchers. The engineering technology programs are designed to provide an opportunity for graduates of two-year associate degree engineering technology programs to continue their education at the baccalaureate level and to pursue careers as engineering technologists. The computer science program prepares students for careers in that field.

**Baccalaureate Programs.** The baccalaureate programs in engineering offer a professional engineering education which can be used as the foundation for several different career objectives: preparation for a career as professional engineers in industry, business or consulting; graduate study to prepare for careers in research, development or teaching; and a more general and more liberal engineering education with the objective of keeping a variety of career avenues open.

Whatever the career objective of the student, a sound engineering educational program must include substantial content in: (1) the humanities and social sciences, (2) the physical sciences, (3) mathematics, and (4) the engineering sciences. Also, (5) there must be an in-depth experience in creative engineering design. The student expecting to accept employment in industry may wish to emphasize the engineering design and engineering science aspects of his or her program, while the student preparing for graduate study might emphasize the mathematics and science aspects. Some engineering graduates ultimately take on executive and management responsibilities in industries and firms which are based upon engineering products and engineering services. Such students may choose to construct an elective option in their program which includes business administration and economics offerings, and other courses to strengthen their communication skills.

The engineering curricula prescribed by the faculty of The University of North Carolina at Charlotte give thorough attention to the five essential components of a sound program of study. Those elements which are considered basic to every program of study are specified in each curriculum outline and result in freshman requirements which are essentially the same for all engineering students. The common basic core serves not only as the educational foundation for the professional engineering courses later in the program but also provides solid preparation for the first step in the professional engineering registration process.

Engineering students are strongly encouraged to pursue the requirements for registration as a Professional Engineer. The first step in the registration process is the successful completion of the Fundamentals Exam (also known as the EIT—Engineer in Training—Exam). Students are encouraged to take this exam during their last semester prior to graduation. Additional requirements subsequent to graduation include the accumulation of at least four years of progressive engineering experience and successful completion of the Principles and Practice Exam.

## ACADEMIC PROGRESSION REQUIREMENTS: BACHELOR'S DEGREE PROGRAMS IN ENGINEERING

I. **Freshman Engineering** is essentially a freshman advising program for students who meet the requirements for admission to the College of Engineering but who are not admitted directly to the lower division. Freshman Engineering students may be admitted to the lower division after completing the freshman year of study and meeting the requirements:

1. Maintain a GPA of at least 2.0.
2. Achieve *C's* or better in CHEM 1101, MATH 1141, MATH 1142, PHYS 2221, ENGR 1100, and EEGR 1102 or MEGR 1102 or CEGR 1102.
3. Accumulate a total of no more than *two* repeats in mathematics, physics, and engineering courses. *In no case may a single course be repeated more than once* (i.e., taken for a grade more than twice) without the Dean's approval.

II. **Lower Division** is essentially the first two years of study. Although the content is not identical for all three major programs (civil, electrical, and mechanical engineering), the academic progression requirements are the same for all majors (including undecided majors):

1. Maintain an overall GPA of at least 2.0 and an engineering course GPA of at least 2.0.
2. Achieve *C's* or better in CHEM 1101, MATH 1141, MATH 1142, PHYS 2221, ENGR 1100, and EEGR 1102, or MEGR 1102 or CEGR 1102.
3. Accumulate a total of no more than *three* repeats in mathematics, physics, and engineering courses. *In no case may a single course be repeated more than once* (i.e., taken for a grade more than twice) without the Dean's approval.

III. **Upper Division** is essentially the last two years of study *in a department major.* There are no undecided majors in the upper division.

1. A student can be admitted to the upper division from the lower division of a department only upon satisfactory completion of 59 hours of lower-division courses including all freshman-year courses, all required mathematics courses, and all required courses in the major. Consequently, transfer students normally are admitted initially to the lower division of the Bachelor's degree program. Also, students who change their major into engineering normally are admitted only to the lower division of the program.
2. A student in the lower division may, with the approval of the adviser, take no more than 12 credit hours of upper-division courses. In no case may a student in the lower division take an upper-division course which has another upper-division course as a prerequisite.
3. A student may not accumulate a total of more than *three* repeats of College of Engineering courses in the upper division. *In no case may a single course be repeated more than once* (i.e., taken for a grade more than twice) without the Dean's approval.

IV. **Discontinuance:** A student who is deemed to be making unsatisfactory academic progress will be recommended for discontinuance from the Bachelor's degree program. Some of the conditions under which students will be recommended for discontinuance include:

1. Failure to satisfy the requirements in I, II or III above or to be admitted to the upper division.
2. Failure to satisfy any prerequisite course after one repeat of that course.
3. Receiving two *F's* in any course in the program.
4. Compiling a grade point deficit of 14 or more in engineering courses.
5. Two successive semesters with a cumulative GPA of less than 2.0 in engineering courses.

The procedure for appeal of any discontinuance decision follows the standard policies of the College of Engineering.

**Two Year Rule.** Any engineering student who has been suspended for academic reasons from UNCC is eligible for one readmission to engineering after a minimum period of two years from the last semester of enrollment at UNCC. Under this rule only those courses for which the student has received a grade of *C* or better can be used to satisfy degree requirements. His or her grade point average will be based only on work attempted after readmission. Eligibility for continued enrollment is determined as in the case of transfer students.

Any student who voluntarily left UNCC and has not attended UNCC for two or more years may choose to be readmitted under this two year rule.

To qualify for honors or high honors, a student readmitted under the two-year rule must complete at least 48 hours in residency in computing the grade point average after readmission to UNCC.

**Cooperative Education Program.** Students in the College of Engineering may desire to obtain practical work experience while pursuing their degree by participating in cooperative education whereby a student alternates semesters of academic study with semesters of work experience in industry. The work experience is under the direction of the College's Cooperative Education Office and is closely related to the student's field of study. Civil engineering, electrical engineering, and mechanical engineering students who complete the Co-op program may receive partial credit toward the experience requirement for registration as a Professional Engineer.

To be eligible for the Co-op program, an engineering or computer science student must have completed at least 24 credit hours at UNCC including a number of specified courses with a minimum GPA of 2.25. A transfer student is expected to have completed at least 12 hours at UNCC. An engineering technology student must have earned an Associate of Applied Science degree with a GPA of 2.5 or better (out of 4.0).

For a graduate to be designated as a Co-op student, he or she must participate in at least three semesters of work experience. Consequently, participation in Co-op Education usually means that the student will take five years to complete the engineering or computer science programs or three years (at UNCC) to complete the entineering technology program.

Students interested in learning more about the advantages and opportunities of participating in this program should contact the Engineering Co-op Office in the College.

## CONTINUING ENGINEERING STUDIES

The College of Engineering sponsors various special educational programs for practicing engineers, technologists, technicians and others in addition to its regular academic degree programs and courses. These include conferences, short courses, seminars and other continuing education programs designed to aid those practicing in the technical professions and occupations to keep abreast of the latest developments in the rapidly expanding technology. The courses listed below are offered on a periodic basis, while many others are offered on demand.

Anyone desiring further information on these courses or requesting special offerings may contact the Office of Continuing Education and Extension.

PROFESSIONAL ENGINEERING-BASICS. Forty-five hours of work reviewing mathematics, chemistry, economics and the basic engineering sciences as preparation for the Professional Engineering Fundamentals (EIT or Exam I) Examination.

PROFESSIONAL ENGINEERING-APPLIED. Fifty-five hours of work reviewing applications in chemical, civil, electrical and mechanical engineering and engineering economics as preparation for the Professional Engineering Principles and Practice (PE or Exam II) Examination.

## COURSE DESCRIPTIONS

### ENGINEERING (ENGR)

**Courses for Undergraduates**

(100) **ENGR 1100. Introduction to Engineering. (1)** Introduction to engineering as an area of study and as a career; engineering morality and public responsibility; professional development and professional registration. *(Fall, Spring)*

(390) **ENGR 3590. Engineering Cooperative Education Experience. (0)** This course is required of Co-op students during the semester they are working. *(Fall, Spring, Summer)*

(385) **ENGR 3695. Engineering Cooperative Education Seminar. (1)** This course is required of Co-op students during semesters immediately following each work assignment for presentation of engineering reports on work done the prior semester. *(Fall, Spring, Summer)*

## LIBERAL ENGINEERING STUDIES (LEGR)

The impact of technology on the present condition and future prospects of humankind has until recently received little formal study. The College of Engineering has attempted to respond to a sincere concern on the part of many students who realize that there are important social and environmental problems resulting from the radical present and future changes in technology. It is the aim of Liberal Engineering Studies to put these problems and their possible technical solutions into perspective.

The following courses are intended primarily for non-engineering students who wish to explore various aspects of societal-technological interactions. Engineering students may enroll but may not use these courses to fulfill requirements for any engineering degree.

(111) **LEGR 1111. Technological Bases of Society I. (3)** Concepts underlying the systems which relate directly to the life of the individual in relation to the field of engineering. Emphasis on scientific ideas relevant to the student—ones that he or she should understand to participate in the decisions of an age of rapidly changing technology. Specific topics include decision making, optimization, modeling and systems. (May be taken with or without LEGR 1151.) *(On demand)*

(112) **LEGR 1112. Technological Bases of Society II. (3)** Prerequisite: LEGR 1111. A continuation of LEGR 1111. Introduction to technological concepts which are applicable to the solution of problems of a social and economic, as well as a technical, nature—problems that are rapidly becoming the frame of reference for contemporary society. Specific topics include patterns of change, feedback, stability, and machines and systems. (May be taken with or without LEGR 1152.) *(On demand)*

(151) **LEGR 1151. Technological Bases of Society-Laboratory I. (1)** Corequisite: LEGR 1111. A laboratory course designed to illustrate the concepts presented in LEGR 1111. Simulation of real life situations using simple laboratory equipment. Two laboratory hours per week. *(On demand)*

(152) **LEGR 1152. Technological Bases of Society-Laboratory II. (1)** Prerequisite: LEGR 1151. Corequisite: LEGR 1112. A laboratory course designed to illustrate the concepts presented in LEGR 1112. A continuation of LEGR 1151. Two laboratory hours per week. *(On demand)*

(490) **LEGR 3090. Special Topics in Liberal Engineering. (1-4)** Prerequisite: consent of the instructor. Supervised study or travel opportunities that are beyond the scope of existing courses. May be repeated for credit. *(On demand)*

(311) **LEGR 3111. Technology in Historical Perspective. (3)** Prerequisite: junior standing. Selected historical cases in science, applied science and technology are reviewed to show the impacts that technological advances have had on our world. Emphasis is placed on the technologies and their effect on our physical environment rather than on the resulting change in our viewpoint toward society, economics or politics. *(On demand)*

(314) **LEGR 3114. Problems in Environmental Control. (3)** Prerequisite: junior standing. Study of a range of environmental problems of interest to the class. The tracing of problem cases to their technological origins; the identification of available, feasible, technological origins; the identification of available, feasible, technological solutions to the specific problems treated. On-site inspection of industrial sources of pollution will be made in a series of field trips. *(On demand)*

(316) **LEGR 3116. Energy, Power and Conservation. (3)** Prerequisite: junior standing. A survey of historic, current and future power sources and devices, including waterwheels and windmills, steam engines and turbines, internal combustion and jet engines, fission and fusion reactors and geothermal, tidal and solar power. Fuel resource reserves, costs, benefits and conservation will be studied. *(On demand)*

# Department of Civil Engineering

*Chairperson:* Professor King
*Professors:* Bayer, Bell, Evett
*Associate Professors:* Janardhanam, Robertson, Wu
*Assistant Professor:* Young
*Visiting Assistant Professor:* Faulkner
*Lecturer:* Graham

A major role of the civil engineer is to focus scientific and technological skills on the creation of physical facilities. Engineering and construction of these facilities advances society toward such basic goals as economic development, environmental protection and social well-being. The civil engineer may be involved in the design and construction of buildings, bridges, dams and other structures; in the development of water resources for urban use, industry and land reclamation; in the transmission of water and control of rivers; in the control of water quality through purification and proper waste treatment; in transportation systems including highways, mass transit, airports, railroads, pipelines, canals and harbor facilities; in the problems associated with the environment including air pollution, noise pollution, ecological effects, land development, urban and regional planning; and in a wide range of services—all involving the health, safety and welfare of the public. The civil engineer must bring about a satisfactory blending of the constructed facility with the natural environment and the social environment, creating an optimum relationship between the human and the environment.

The objective of the Civil Engineering program is to provide the student with not only the latest technology but also opportunities to develop the social science and management skills required to assess needs, evaluate social and environmental impacts, and operate the engineering systems. Such opportunities are insured through the broadened curriculum found in the Department, and the encouragement of interactions with other departments and colleges of The University.

The Department offers a Bachelor of Science in Civil Engineering (B.S.C.E.) degree, and administers a program leading to the Master of Science in Engineering (M.S.E.) degree. For information about the M.S.E. program, see pages 384-385.

Some students will wish to plan early in their undergraduate careers for continuation of their engineering studies beyond the first degree. The large number of fields of graduate study which can logically follow the curriculum offered by the Department of Civil Engineering may influence how each student plans a program of study. The technical elective sequence allows flexibility for concentration in specific areas, and each student will design a technical elective program with the advice and approval of his or her adviser in order to achieve an individual goal.

The program in Civil Engineering is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, a specialized accrediting body recognized by the Council on Postsecondary Accreditation.

## BACHELOR OF SCIENCE IN CIVIL ENGINEERING (B.S.C.E.)

A major in Civil Engineering leading to the B.S.C.E. degree consists of a total of 132 credit hours. These requirements are:

| | |
|---|---|
| English | 6 |
| Humanities and Social Science Electives | 12 |
| Mathematics | 17 |
| Physics | 11 |
| Chemistry | 4 |
| Science Elective | 3 |
| Freshman Engineering | 1 |
| Electrical Engineering | 3 |
| Engineering Science | 9 |
| Mechanical Engineering | 6 |
| Departmental Requirements | 42 |
| Technical Electives | 15 |
| Economics | 3 |
| | 132 |

The social science and humanities electives must be chosen to satisfy Goals III, V and VI of University general education requirements and to meet the objectives of a broad education consistent with the educational goals of the profession. This subject area must include some courses at an advanced level.

The science elective must be chosen from the physical, life or earth sciences and must complement the student's overall educational plan.

The technical elective sequence allows flexibility for concentration in specific areas, and each student will design a technical elective program with the adviser's advice and approval in order to achieve an individual goal. The technical electives must contain at least six hours of course work dealing with engineering science, analysis, synthesis or design, with the remaining nine hours being selected from the areas of engineering, science, mathematics, business and communications.

All civil engineering majors must satisfactorily complete the Freshman Engineering course ENGR 1100 during their first semester in attendance in civil engineering at UNCC.

## CURRICULUM OUTLINE FOR THE CIVIL ENGINEERING MAJOR LEADING TO THE B.S.C.E. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| MATH 1141 Calculus I | 4 | MATH 1142 Calculus II | 4 |
| CHEM 1101 Principles of Chemistry | 3 | PHYS 2221 Dynamics | 3 |
| CHEM 1101L Chemistry Lab | 1 | PHYS 2221L Experimental Physics I | 1 |
| ENGL 1101 English | 3 | Science Elective | 3 |
| ENGR 1100 Intro. to Engineering | 1 | CEGR 1102 Computer Applications | 2 |
| Humanities or Social Science | 3 | ENGL 1102 English | 3 |
| | 15 | | 16 |

### Sophomore Year

| | | | |
|---|---|---|---|
| MATH 2141 Calculus III | 3 | MATH 2171 Differential Equations | 3 |
| MATH 2122 Elements of Statistics | 3 | PHYS 2241 Modern Physics | 3 |
| PHYS 2231 Electricity & Magnetism | 3 | ESGR 2142 Engineering Mechanics II | 3 |
| PHYS 2231L Experimental Physics II | 1 | ESGR 3141 Solid Mechanics | 3 |
| ESGR 2141 Engineering Mechanics I | 3 | CEGR 2152 Measurements Lab | 2 |
| Humanities or Social Science | 3 | ECON 2102 Principles of Economics | 3 |
| CEGR 2101 Engineering Drawing | 2 | | |
| | 18 | | 17 |

### Junior Year

| | | | |
|---|---|---|---|
| MEGR 3114 Fluid Mechanics | 3 | MEGR 3111 Thermodynamics I | 3 |
| EEGR 2161 Basic Electrical Engr. I | 3 | CEGR 3152 Transportation Lab | 2 |
| CEGR 3121 Structural Analysis | 3 | Technical Elective | 3 |
| CEGR 3141 Environmental Engr. I | 3 | Technical Elective | 3 |
| CEGR 3151 Environmental Lab | 2 | Technical Elective | 3 |
| CEGR 3161 Transportation Engr. | 3 | Humanities or Social Science | 3 |
| | 17 | | 17 |

### Senior Year

| | | | |
|---|---|---|---|
| CEGR 3221 Steel Design | 3 | CEGR 3252 Geotechnical Lab | 2 |
| CEGR 3225 Concrete Design | 3 | CEGR 3272 Systems and Design II | 3 |
| CEGR 3251 Concrete and Steel Lab | 2 | CEGR xxxx Department Elective | 3 |
| CEGR 3268 Geotechnical Engineering | 3 | Technical Elective | 3 |
| CEGR 3271 Systems and Design I | 3 | Technical Elective | 3 |
| Humanities or Social Science | 3 | CEGR 3281 Professional Development | 1 |
| | 17 | | 15 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## CIVIL ENGINEERING (CEGR)

(102) **CEGR 1102. Computer Applications. (2)** Introduction to computer programming through the study of FORTRAN IV, including the use of subprograms. Civil engineering applications will be stressed. *(Spring)*

(201) **CEGR 2101. Civil Engineering Drawing. (2)** Prerequisite: CEGR 1102. An introduction to engineering drawing. Topics include isometric, oblique and perspective drawing; orthographic projection; section views and building construction plans. One hour of lecture and three laboratory hours per week. *(Fall)*

(252) **CEGR 2152. Measurements Laboratory. (2)** Prerequisites: CEGR 2101 and MATH 2122. An introduction to laboratory and field data collection techniques. Instruction in data analysis, data presentation and report writing. Elements of plane surveying, basic theory and fundamental measurements. One hour of lecture and three laboratory hours per week. *(Fall)*

(490) **CEGR 3090. Special Topics in Civil Engineering. (1-4)** This course will be devoted to specific new areas which are emerging in the various fields of civil engineering. The course will build upon and synthesize the knowledge the students have gained from the engineering science, mathematics and physical science stems of the core curriculum. May be repeated for credit. *(On demand)*

(321) **CEGR 3121. Structural Analysis. (3)** Prerequisites: ESGR 3141 and MATH 2171. Corequisite: CEGR 2152. Analysis of statically determinate and indeterminate beams, trusses and frames to include shear and moment diagrams, rough deflected shapes and deflections. Influence lines and criteria for moving loads. Indeterminate analyses to include methods of consistent deflection, slope deflection and moment distribution. *(Fall)*

(341) **CEGR 3141. Environmental Engineering I. (3)** Prerequisite: MATH 2171. Corequisites: CEGR 2152 and MEGR 3114. General overview of environmental problems. Topics in water resources engineering including: development of surface and groundwater sources, analysis of water collection, transmission and distribution systems, design of sanitary and stormwater drainage systems, and stormwater management. Introduction to water quality modeling. *(Fall)*

(351) **CEGR 3151. Environmental Laboratory. (2)** Prerequisite: CHEM 1101L. Corequisite: CEGR 3141. Laboratory problems in environmental engineering. Emphasis on analysis and presentation of results as well as on the significance of results as they affect theory and/or practice. One hour of lecture and three laboratory hours per week. *(Fall)*

(352) **CEGR 3152. Transportation Laboratory. (2)** Corequisite: CEGR 3161. Design of transportation systems including highways, airports, pipelines and mass transit; route layout, geometric design and earthwork calculations; computer-aided system simulation and evaluation. One hour of lecture and three laboratory hours per week. *(Spring)*

(261) **CEGR 3160. Surveying. (3)** Prerequisite: CEGR 2152. Elements of plane surveying including taping, transit, level, stadia, plane table, topographic surveying and mapping, care and adjustment of instruments; error adjustments; area and earthwork computations; introduction to photogrammetry; and computer techniques. *(On demand)*

(361) **CEGR 3161. Transportation Engineering I. (3)** Prerequisite: MATH 2141. Corequisite: CEGR 2152. Analysis of transportation facilities; planning, location and economic considerations, with special emphasis on land transportation. *(Fall)*

(412) **CEGR 3212. Computer Applications in Civil Engineering. (3)** Prerequisite: senior standing in Civil Engineering. The application of the digital computer to various types of civil engineering problems. Examinations in depth of selected civil engineering problems. *(On demand)*

(421) **CEGR 3221. Structural Steel Design I. (3)** Prerequisites: CEGR 3121 and ESGR 3141. Analysis and design of structural steel components with emphasis on the fundamental theories necessary for a thorough understanding of the design procedure. Design philosophies and types of steel structures. Columns, tension members and laterally supported beams are considered. General flexural theory including bending of unsymmetrical sections. Current AISC Specifications used. *(Fall)*

(425) **CEGR 3225. Reinforced Concrete Design I. (3)** Prerequisites: CEGR 3121 and ESGR 3141. Analysis and design of reinforced concrete components with emphasis on fundamental theories. Mechanics and behavior of reinforced concrete. Flexural members to include singly and doubly reinforced beams of various cross sections (rectangular, T-beams, joists, one-way slabs and others). Shear in beams and columns. Short columns to include uniaxial and biaxial bending. Construction of short column interaction diagrams. Introduction to footings. Current ACI Specifications used. *(Fall)*

(432) **CEGR 3232. Urban Engineering. (3)** Prerequisite: consent of instructor. An examination of those societal problems of metropolitan regions most amenable to engineering solutions. Current urban literature will be reviewed in seminar, and selected topics amenable to engineering analysis will be studied. Written reports will be presented. *(On demand)*

(451) **CEGR 3251. Concrete and Steel Laboratory I. (2)** Prerequisites or corequisites: CEGR 3221 and CEGR 3225. Design of concrete mixes; testing of standard concrete cylinders, beams and columns. Testings of steel tensile members and beams. Analysis and design of simple structural systems. One hour of lecture and three laboratory hours per week. *(Fall)*

(452) **CEGR 3252. Geotechnical Laboratory. (2)** Prerequisites or corequisites: ESGR 3141 and CEGR 3268. Demonstrations and experiments verifying theoretical bases of geotechnical engineering; cohesionless and cohesive soils. One lecture hour and three lab hours per week. *(Spring)*

(468) **CEGR 3268. Geotechnical Engineering. (3)** Prerequisites: ESGR 3141 and CEGR 2152. Theoretical bases of geotechnical engineering to include shear, stress and strain in soils and failure of soils; foundation, permeability; seepage and settlement; retaining structures, slope stability and earth dams; soil-structure interaction; foundations. *(Fall)*

(471) **CEGR 3271. Systems and Design I. (3)** Prerequisite: senior standing in Civil Engineering, consent of instructor and MATH 2171. Introduction to systems engineering techniques as applied to civil engineering problems. The application of analytical methods to the development and evaluation of engineering systems. Course stresses methodological considerations and engineering projects which are carried out by small groups of students. *(Fall)*

(472) **CEGR 3272. Systems and Design II. (3)** Prerequisite: CEGR 3271. Continuation of CEGR 3271 systems techniques. Utilization of students' previous course work and principles of CEGR 3271 to creatively investigate and produce alternative solutions for a comprehensive engineering project. Efforts will result in written and verbal class presentations. *(Spring)*

(481) **CEGR 3281. Professional Development. (2)** Prerequisite: senior standing in Civil Engineering. A series of one-hour lectures by faculty and invited speakers. Instruction in the basic concepts of professionalism and the nature and purpose of engineering ethics. Offered on a *Pass/Fail* basis. *(Spring)*

(492) **CEGR 3890. Individualized Study. (Variable credit 1-3 hours.)** Prerequisite: consent of the Department. Supervised individual study within an area of a student's particular interest which is beyond the scope of existing courses. *(On demand)*

(491) **CEGR 3990. Undergraduate Research in Civil Engineering. (Variable credit 1-4 hours.)** Prerequisite: consent of the Department. This course involves the independent study of a theoretical and/or experimental problem in a specialized area of Civil Engineering. May be repeated for credit. *(On demand)*

**Courses for Advanced Undergraduates and Graduate Students**

(442) **CEGR 4142. Environmental Engineering II. (3) (3G)** Prerequisite: CEGR 3141. Analysis and design of water and wastewater treatment processes including: physical, chemical and biological treatment; and treatment and disposal of sludge. Computer-aided design of treatment systems. Control of toxic and hazardous wastes. *(Spring)*

(462) **CEGR 4162. Transportation Planning. (3) (3G)** Prerequisite: CEGR 3161. Urban transportation considerations; travel characteristics of urban transportation systems; analysis of transportation-oriented studies; analytic methods of traffic generation, distribution, modal split and assignment; traffic flow theory. *(On demand)*

(422) **CEGR 4222. Structural Steel Design II. (3) (3G)** Prerequisite: CEGR 3221. Analysis and design of structural steel components and systems with emphasis on the fundamental theories necessary for a thorough understanding of the design of complete structures. Compression members affected by local buckling, beams with lateral-torsional buckling, continuous beams and beam columns are covered. Welded and bolted connections. Current AISC Specifications used. *(Spring)*

(424) **CEGR 4224. Advanced Structural Analysis. (3) (3G)** Prerequisite: CEGR 3121. A continuation of CEGR 3121. Fundamental and special methods of analysis of statically determinate and indeterminate structures. Topics include deflection theory, energy theory, variable cross-section analysis, multistory moment distribution. *(Spring)*

(426) **CEGR 4226. Reinforced Concrete Design II. (3) (3G)** Prerequisite: CEGR 3225. Analysis and design of reinforced concrete components and systems with emphasis on the fundamental theories necessary for a thorough understanding of concrete structures. Concentrically loaded slender columns, slender columns under compression plus bending. Wall footings and column footings. Analysis of continuous beams and frames. Total design project involving the analysis and design of a concrete structure. Current ACI Specifications used. *(Spring)*

THE 5000-LEVEL COURSES ARE FIRST-YEAR GRADUATE COURSES ALTHOUGH SOME ADVANCED SENIORS MAY ENROLL WITH PERMISSION OF THE DEPARTMENT. FOR COURSE DESCRIPTIONS, SEE PAGE 387.

# Department of Computer Science

*Chairperson:* Professor S. Chen
*Professors:* Allen, Epstein, Schell
*Associate Professors:* K. Chen, Ras, Summers
*Visiting Associate Professors:* Gyires, Hirmanpour
*Assistant Professors:* Modaress-Razavi, Mostafavi
*Visiting Assistant Professors:* Jankowski, W. Zhang
*Lecturers:* Frazier, Hatley, Hinson, Lejk, Reiter, Scott, Shaw, M. Zhang
*Adjunct Professors:* Nelson, Pawlak, Rasiowa

Computer Science is the term applied to areas of study centering on the organizational and structural properties of systems, arrays of symbols, and mechanical languages which find their application in the processing and communication of information. The computer scientist's concerns are:

- the organization and interaction of equipment constituting an information processing system,
- the development of software systems to control and communicate with equipment,
- the derivation and study of procedures and basic theories for the specification of processes, and
- the application of systems, software, procedures and theories of computer science to other disciplines.

The Computer Science Department offers programs leading to three degrees: Bachelor of Arts, Bachelor of Science, and Master of Science. (See pages 357-360 for information on the M.S. degree.) Students at UNCC are prepared for their profession through a comprehensive program of courses aided by some of the latest computer equipment available.

**Cooperative Education in Computer Science.** By participating in the Cooperative Education program, students in computer science may pursue their education along with alternating work experiences so that they may be better prepared to enter their chosen professional career. Interested students should contact the Department of Computer Science for more information.

## BACHELOR OF ARTS

The Computer Science major leading to the Bachelor of Arts degree provides education and training for students who intend to pursue a career in computer information systems. It consists of a minimum of 36 semester hours of computer science and 17 semester hours of mathematics numbered 1140 or above. These currently include:

Computer Science: 1100P, 2111, 2113, 2140, 2161, 2163, 3155, 3160, 3650, 3688, and six semester hours of approved computer science courses numbered 3000 or above; and

Mathematics: 1141, 1142, 2122, 2164, 2165.

A component of related work must be included, which consists of 15 semester hours of approved non-computer science courses forming an integrated program of secondary strength, or of nine semester hours of approved mathematics courses at the 3000 level or above.

## BACHELOR OF SCIENCE

The Computer Science major leading to the Bachelor of Science degree provides education and training for students who intend to pursue a computer science or computer engineering program. It consists of a minimum of 42 semester hours of computer science and 20 semester hours of mathematics courses numbered 1140 or above. These currently include:

Computer Science: 1100P, 2113, 2140, 2141, 2161, 2163 or 2175, 3141, 3143, 3160, 3650, 3651, 3688, and six semester hours of approved computer science courses numbered 3000 or above; and

Mathematics: 1141, 1142, 2122, 2164, 2165 and three semester hours of approved mathematics courses numbered 2000 or above.

Students working toward the B.S. degree must complete 14 semester hours of sciences, including Physics 2221, 2221L, 2231 and 2231L. A component of related work must be included, which consists of 15 semester hours of approved non-computer science courses forming an integrated program of secondary strength, or of nine semester hours of approved mathematics courses at the 3000 level or above.

**Academic Progression Requirements for Computer Science Majors**

**Lower Division.** The lower division of the computer science program is essentially the first two years of study. Requirements are the same for all specializations within the Department.

Requirements for continuation in lower division:

1. An overall GPA of at least 2.0 and a GPA of at least 2.0 in all computer science courses.
2. Grades of *C* or better in CSCI 1100P, CSCI 2113, CSCI 2161, required 1000-level mathematics courses, and required laboratory science courses.
3. Students may not accumulate a total of more than three repeats in mathematics and lower-division computer science courses. In no case may a single course be repeated more than once without the approval of the Department Chairperson and the Dean of the College of Engineering.

**Upper Division.** The upper division of the computer science program is essentially the last two years of study in a departmental area of specialization. Requirements:

1. *Admission to the Upper Division:* A student may be admitted to the upper division upon completion of a minimum of 59 semester hours of lower-division courses, with a GPA of 2.0 or better including:
   (a) completion of all lower-division major courses with a GPA of 2.0 or better; lower division mathematics courses; and all freshman courses and
   (b) accumulation of not more than three repeats in mathematics and computer science courses.
2. Transfer students are normally admitted to the lower division of the bachelor's program in computer science.
3. Students who change their major into computer science are admitted to lower division only.
4. A student in lower division may, with departmental approval, take a minimum of nine hours of upper-division courses. In no case may a student in lower division take an upper-division course with an upper-division course as a prerequisite.

Second degree candidates will be evaluated on an individual basis and may be admitted to the lower or upper division depending on the number of courses applicable to the computer science program. A GPA of 2.5 or better for the first degree will be required for admission.

*Lower-Division Courses:* CSCI 1100P, 2111, 2113, 2114, 2115, 2123, 2140, 2161, 2163.

*Upper-Division Courses:* all courses numbered over 3000.

*Courses Open to Upper- and Lower-Division Students:* CSCI 2141, 2175.

**Discontinuance.** A student who is deemed to be making unsatisfactory academic progress will be recommended for discontinuance from the computer science program. Some of the conditions under which students will be recommended for discontinuance include:

1. Failure to be admitted to the upper division.
2. Failure to satisfy any prerequisite course after one repeat of that course.
3. Two *F's* in any course in the program.
4. A grade point deficit of 14 or more points in computer science courses.
5. Two successive semesters with a cumulative GPA of less than 2.0 in computer science courses.
6. Three repeats in upper-division computer science courses.

The procedure for appeal of any discontinuance follows the standard policies of the College of Engineering.

## COMPUTER SCIENCE MINOR

Requirements for the minor include completion of: CSCI 100P, 2113, 2140, 2161, 3141, and any one of CSCI 3160, 3162, or 3175. Also required is a mathematics core of three courses, either (a) MATH 1141, 2164, 2165; or (b) MATH 1120, MATH 1220 or 2122, and MATH 2121 or 2111.

## CURRICULUM OUTLINE
## FOR THE COMPUTER SCIENCE MAJOR
## LEADING TO THE B.A. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| CSCI 1100P | 3 | CSCI 2113 | 3 |
| Mathematics 1141 | 4 | Mathematics 1142 | 4 |
| English 1101 | 3 | English 1102 | 3 |
| GOAL VI | 3 | GOAL III | 3 |
| | | GOAL VI | 3 |
| | 13 | | 16 |

### Sophomore Year

| | | | |
|---|---|---|---|
| CSCI 2140 | 3 | CSCI 2161 | 3 |
| CSCI 2111 | 3 | Mathematics 2165 | 3 |
| Mathematics 2164 | 3 | Communication Studies 2105 | 3 |
| English 2116 | 3 | GOAL V | 3 |
| GOAL IV | 4 | GOAL IV | 4 |
| | 16 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| CSCI 2163 | 3 | CSCI 3155 | 3 |
| CSCI 3688 | 3 | Related Work | 6 |
| Mathematics 2122 | 3 | GOAL V | 3 |
| Related Work | 6 | Electives | 3 |
| | 15 | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| CSCI 3xxx/4xxx | 3 | CSCI 3xxx/4xxx | 3 |
| CSCI 3160 | 3 | CSCI 3650 | 3 |
| Related Work | 3 | Electives | 9 |
| Electives | 6 | | |
| | 15 | | 15 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## CURRICULUM OUTLINE
## FOR THE COMPUTER SCIENCE MAJOR
## LEADING TO THE B.S. DEGREE

### Freshman Year

| | | | |
|---|---|---|---|
| CSCI 1100P | 3 | CSCI 2113 | 3 |
| Mathematics 1141 | 4 | Mathematics 1142 | 4 |
| English 1101 | 3 | English 1102 | 3 |
| Science course | 3 | Science course | 3 |
| GOAL VI | 3 | GOAL III | 3 |
| | 16 | | 16 |

### Sophomore Year

| | | | |
|---|---|---|---|
| CSCI 2140 | 3 | CSCI 2141 | 3 |
| CSCI 2163 or 2175 | 3 | CSCI 2161 | 3 |
| Physics 2221 | 3 | Physics 2231 | 3 |
| Physics 2221L | 1 | Physics 2231L | 1 |
| Mathematics 2164 | 3 | GOAL VI | 3 |
| English 2116 | 3 | Mathematics 2165 | 3 |
| | 16 | | 16 |

### Junior Year

| | | | |
|---|---|---|---|
| CSCI 3688 | 3 | CSCI 3160 | 3 |
| CSCI 3xxx/4xxx | 3 | CSCI 3xxx/4xxx | 3 |
| Mathematics 2122 | 3 | Mathematics 2xxx or 3xxx | 3 |
| Related Work | 3 | Related Work | 3 |
| GOAL V | 3 | GOAL V | 3 |
| | 15 | | 15 |

### Senior Year

| | | | |
|---|---|---|---|
| CSCI 3141 | 3 | CSCI 3143 | 3 |
| CSCI 3650 | 3 | CSCI 3651 | 3 |
| Related Work | 6 | Related Work | 3 |
| Elective | 3 | Electives | 3 |
| | 15 | | 12 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

## COMPUTER SCIENCE (CSCI)

### Courses for Undergraduates

(100) **CSCI 1100. Algorithmic Languages I. (3)** Prerequisite: MATH 1101 or 1103 with a grade of *C* or better, or placement by the Department. Basic concepts and terminology of computers, problem solving with computers, programming techniques required to formulate and program various numerical and non-numerical algorithms, through study of a higher-level programming languages, such as PASCAL (CSCI 1100P) or FORTRAN (CSCI 1100A or CSCI 1100). (Credit not given for both CSCI 1100 and CSCI 1101.) *(Fall, Spring, Summer) (Evenings)*

*Notes regarding sections of CSCI 1100 — Algorithmic Languages I:*

**CSCI 1100** is open to all majors except Engineering Technology and Computer Science majors.

**CSCI 1100A** sections are restricted to Engineering and Engineering Technology majors.

**CSCI 1100P** is a required course for Computer Science majors and minors.

(101) **CSCI 1101. Introduction to Computer Concepts. (3)** Prerequisite or corequisite: MATH 1101 or 1103. This is an introductory course for non-CSCI majors that covers various aspects of computer hardware and software, and surveys the application of computers in different fields-business, medicine, engineering, government, eduation, etc. PC-software (word processing, spreadsheets, and databases) is introduced by several projects/assignments. (Cannot be taken for credit if CSCI 1100 is taken for credit. This course is not the equivalent of CSCI 1100 as a prerequisite for other computer science courses.) *(Fall, Spring) (Evenings)*

(250) **CSCI 2050. Topics in Computer Science. (1-3)** Prerequisite: consent of the Department. Topics in computer science selected to supplement the regular course offerings at the 2000 level. (May be repeated for credit with the consent of the Department.) *(On demand)*

(211) **CSCI 2111. COBOL and File Structures. (3)** Prerequisite: CSCI 1100 or equivalent with a grade of *C* or better, or consent of the Department. A study of COBOL and its use in file manipulations including structures, sorting, blocks, accessing of files, and transaction processing. Uses of file systems will be studied. *(Fall, Spring, Summer) (Evenings)*

(213) **CSCI 2113. Procedure-Oriented Programming in PL/I. (3)** Prerequisite: CSCI 1100 or equivalent with a grade of *C* or better, or consent of the Department. A study of the programming language PL/I and the principles of procedure-oriented programming. Block structure, data elements, stream and record I/O, dynamic program structure, compile time facilities in PL/I. *(Fall, Spring, Summer) (Evenings)*

(214) **CSCI 2114. Procedure-Oriented Programming in ALGOL. (3)** Prerequisite: CSCI 1100 or equivalent with a grade of *C* or better, or consent of the Department. A study of the programming language ALGOL and the principles of procedure-oriented programming. Block structure, data elements, record I/O, dynamic program structure, pointers, strings, and job-related facilities. *(On demand)*

(215) **CSCI 2115. APL Programming. (3)** Prerequisite: CSCI 1100 with a grade of *C* or better, or consent of the Department. The study of programming language APL. Datatypes, functions, operations, files, programming style, dynamic storage management. *(On demand)*

**CSCI 2116. C Programming. (3)** Prerequisite: CSCI 1100 with a grade of *C* or better or consent of the Department. A study of the programming language C. Data types, operators, functions, program structure and storage classes, exceptions, concurrent programming, preprocessor. *(On demand)*

(223) **CSCI 2123. Introduction to Numerical Methods. (3)** Prerequisites: CSCI 1100 and MATH 1142. General concepts of scientific computing and their applications to such areas as non-linear equations, numerical integration, spline and polynomial interpolation, and initial value problems. *(On demand)*

(240) **CSCI 2140. Assembly Language, Machines, Systems. (3)** Prerequisite: CSCI 1100P or equivalent with a grade of *C* or better. General principles of assembly languages and assembly language programming. Computer structure, addressing techniques, internal representations, assembly systems. *(Fall, Spring, Summer) (Evenings)*

(241) **CSCI 2141. Introduction to Systems Programming. (3)** Prerequisite: CSCI 2140 with a grade of *C* or better. Advanced assembly language concepts, use and management of macro and subroutine libraries, debugging techniques, program segmentation, parameter passing, file access and control programming, device drivers and interrupt handlers, reentrant coding, coroutines. *(Fall, Spring, Summer) (Evenings)*

(261) **CSCI 2161. Data Structures. (3)** Prerequisites: CSCI 1100 with a grade of *C* or better, and knowledge of two higher-level languages. Stacks, queues, arrays, strings, lists, trees, and graphs. Applications to recursion, garbage collection, storage compaction, tree traversals, accessing of information, design and analysis of algorithms. *(Fall, Spring, Summer) (Evenings)*

**CSCI 2163. Introduction to File Processing. (3)** Prerequisites: knowledge of a high-level language which supports random access file methods and CSCI 2161. A course to introduce concepts and techniques of structuring data on external storage devices; and to provide the foundation for applications of data structures and file processing techniques. *(Fall)*

(275) **CSCI 2175. Logic and Algorithms. (3)** Prerequisites: CSCI 1100 and MATH 1141, or equivalent. An introduction to propositional calculus, predicate calculus, algorithms, Turing machines, computability, and logic design. *(Spring, Summer) (Evenings)*

**Courses for Advanced Undergraduates**

(350) **CSCI 3050. Topics in Computer Science. (1-3)** Prerequisite: consent of the Department. Topics in computer science at the upper-division level. May be repeated for credit as topics vary with the consent of the Department. *(On demand)*

(315) **CSCI 3115. Design and Analysis of Algorithms. (3)** Prerequisites: CSCI 2161 with a grade of *C* or better, and junior standing. Techniques and tools for the development of correct algorithms. Structured and modular programming, efficiency and correctness, testing, recursion, complexity, and heuristics. *(Fall, Summer) (Evenings)*

**CSCI 3141. Computer Organization. (3)** Prerequisite: CSCI 2140 with a grade of *C* or better, or consent of the Department. Basic digital components, data representations, machine control flow, accessing, transfer and I/O functions. Introduction to multilevel machines, microprogramming concepts, survey of various computer architectures. *(Fall, Spring) (Evenings)*

**CSCI 3143. Operating Systems. (3)** Prerequisite: CSCI 3141. Introduction to multiprogramming operating systems. Process synchronization and management of memory, devices, and files; performance evaluation. *(Spring) (Evenings)*

**CSCI 3155. Software Engineering. (3)** Prerequisite: CSCI 2163 or consent of the Department. The system development cycle is examined in detail from the aspects of software engineering. Current tools and techniques of systems design-data dictionary, data flow diagrams, structured walkthroughs, capacity planning-will be taught and presented in conjunction with case studies and class problems. *(Spring) (Evenings)*

(360) **CSCI 3160. Data Base Design and Implementation. (3)** Prerequisite: CSCI 2161 with a grade of *C* or better. Logical and physical data base organization, data models, design issues, and secondary storage considerations. Emphasis on actual participation in the design and implementation of data bases. *(Fall, Spring) (Evenings)*

(362) **CSCI 3162. Data Communications and Distributed Processing. (3)** Prerequisites: CSCI 2141 with a grade of *C* or better, and two higher-level computer languages. Interface standards and protocols, hardware standards, common carrier limitations, modems and multipliers, circuit, message and packet switching, datagrams and virtual circuits, error detection, text compression, virtual terminals. *(Fall, Spring) (Evenings)*

(375) **CSCI 3175. Introduction to Theory of Computation. (3)** Prerequisite: CSCI 2175. Finite automata; context-free languages; Turing machines; recursive functions; Church's thesis; unsolvable problems; computational complexity. *(Spring) (Evenings)*

(450) **CSCI 3650. Senior Project. (3)** Prerequisites: senior standing, and at least two CSCI 31xx/4xxx courses with a grade of *C* or better, or consent of the Department. An individual or group project in the teaching, theory, or application of computer science under the direction of a faculty member. Projects must be approved by the Department before they can be initiated. *(Fall, Spring)*

(451) **CSCI 3651. Senior Project. (3)** Prerequisite: CSCI 3650. A continuation of CSCI 3650. *(Fall, Spring)*

**CSCI 3688. Computers and Their Impact on Society. (3)** Prerequisites: junior standing and consent of the Department. Writing intensive. A study of current topics (software piracy, hacking, professional conduct) in computer science and the impact of computers on various subsets (home, government, education) of society. *(Fall, Spring, Summer) (Evenings)*

(390) **CSCI 3690. Seminar. (1-6)** Prerequisite: consent of the Department. May be repeated for credit. *(Fall, Summer)*

(391) **CSCI 3691. Seminar. (1-6)** Prerequisite: consent of the Department. May be repeated for credit. A continuation of CSCI 3690. *(On demand)*

(490) **CSCI 3699. Senior Seminar. (1-3)** Prerequisites: senior standing and consent of the Department. Each participant will prepare a lecture on a topic in computer science. Emphasis will be on communication of technical information as well as on content of the presentations. May be repeated for credit. *(On demand)*

**Courses for Advanced Undergraduates and Graduate Students**

**CSCI 40XX. Topics in Computer Science. (3) (3G)** *(On demand)*

**Courses for Graduate Students and Advanced Undergraduates**

FOLLOWING ARE COURSES DESIGNED PRIMARILY FOR GRADUATE STUDENTS, WHICH MAY BE TAKEN BY ADVANCED UNDERGRADUATES FOR UNDERGRADUATE CREDIT. SEE PAGES 358-359 FOR COMPLETE COURSE DESCRIPTIONS.

**CSCI 50XX. Topics in Computer Science. (3) (3G)**

**CSCI 5102. Survey of Programming Languages. (3) (3G)**

**CSCI 5110. Programming Languages and Compilers. (3) (3G)**

**CSCI 5111. Advanced Topics in Programming Languages and Compilers. (3) (3G)**

**CSCI 5112. Software Systems Design and Implementation. (3) (3G)**

**CSCI 5130. Computer Graphics—Design of Interactive Systems. (3) (3G)**

(431) **CSCI 5131. Simulation. (3) (3G)**

**CSCI 5141. Computer Organization and Architecture. (3) (3G)**

**CSCI 5150. Artificial Intelligence. (3) (3G)**

**CSCI 5156. Topics in Computer-Aided Instruction. (3) (3G)**

**CSCI 5170. Formal Languages and Automata. (3) (3G)**

**CSCI 5171. Logic Programming. (3) (3G)**

**CSCI 5175. Computability and Complexity. (3) (3G)**

## COURSE DESCRIPTIONS

### COMPUTER SCIENCE/ENGINEERING (CPGR)

**CPGR 3182. Computer Architecture. (3)** Prerequisite: EEGR 3181 or permission of the Department. Von Neumann architecture; stack processing, pipelining, vector and multiprocessing and data flow architecture. *(On demand)*

**CPGR 4181. Microcomputer Interfacing. (3) (3G)** Prerequisite: EEGR 2112, CSCI 2140, or permission of the Department. Signal conditioning, A/D conversion, noise, transmission line effects, signal processing, D/A conversion and serial/parallel interfaces. *(On demand)*

**CPGR 5182. Computer Arithmetics. (3) (3G)** Prerequisite: permission of the Department. Principles, architecture and design of fast two operand adders, multioperand adders, standard multipliers and dividers. Cellular array multipliers and dividers. Floating point processors, BCD and excess three adders, multipliers and dividers. *(On demand)*

# Department of Electrical Engineering

*Chairperson:* Professor Wayne
*Distinguished Professor Emeritus:* Barnette
*Distinguished Professor:* Nicollian
*Associate Professors:* Coleman, Kakad, Lukic, Smith
*Assistant Professors:* Cathey, Makki, Tranjan
*Lecturer:* Jenkins

The Electrical Engineering Department provides instruction and research in areas of electrical and computer engineering such as electronics, microelectronics, electric power systems, system and control theory, digital systems, and signal processing and communications.

The Department offers a Bachelor of Science in Electrical Engineering (B.S.E.E.) degree. A six-semester sequence of courses emphasizing circuits and systems forms the core of the curriculum. These courses are designed to develop the concepts and analysis techniques fundamental to the various areas of specializations. Emphasis is placed on the utilization of the computer in all courses throughout the curriculum.

The laboratory courses are designed to serve three purposes: (1) to teach the basic techniques of instrumentation; (2) to develop skills in communications; and (3) to relate the analytical methods developed in the classroom to the performance of real physical systems.

The curriculum requirements are flexible enough so that a student may synthesize a program of study to achieve his or her particular objectives and his or her desired degree of specialization. This is done through the use of the technical electives, with the guidance and approval of the student's academic adviser and approval of the Department chairperson. If further specialization in a particular area is desired, the student may be encouraged to seek an advanced degree.

Graduate studies in electronics, microelectronics, computer systems, signal and image processing, communications, and power and control systems are offered by the Department at both the master's and doctoral (cooperative Ph.D.) levels. (See the Graduate School section of this *Catalog*.)

The program in Electrical Engineering is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, a specialized accrediting body recognized by the Council on Postsecondary Accreditation.

## BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING (B.S.E.E.)

A major in Electrical Engineering leading to the B.S.E.E. degree consists of a total of 132 credit hours. These requirements are:

| | |
|---|---|
| English | 6 |
| Humanities and Social Science Electives | 12 |
| Mathematics | 17 |
| Physics | 10 |
| Chemistry | 4 |
| Science Elective | 3 |
| Freshman Engineering | 1 |
| Engineering Science | 3 |
| Mechanical Engineering | 3 |
| Departmental Requirements | 58 |
| Technical Electives | 12 |
| Economics | 3 |
| | 132 |

The social science and humanities electives must be chosen to satisfy Goals III, V and VI of University general education requirements and to meet the objectives of a broad education consistent with the educational goals of the profession. This subject area must include some courses at an advanced level.

The science elective must be chosen from the physical, life or earth sciences and complement the student's overall educational plan.

The mathematics elective may be selected from MATH 2122, 2164, or a 3000-level mathematics course approved by the Department.

The technical electives are chosen by students in consultation with their academic adviser. Students can use these electives to (1) obtain some breadth within electrical engineering by choosing additional advanced courses; (2) obtain significant depth within a particular area of electrical engineering; (3) prepare for graduate work in electrical engineering. The technical electives must contain at least nine hours of course work dealing with engineering science, analysis, synthesis or design, with the remaining three hours being in engineering, science, mathematics, business or computer science.

All electrical engineering majors must satisfactorily complete the Freshman Engineering course ENGR 1100 during their first semester in attendance in electrical engineering at UNCC.

All junior-level core courses must be satisfactorily completed prior to enrolling in the senior project courses.

## CURRICULUM OUTLINE FOR THE ELECTRICAL ENGINEERING MAJOR LEADING TO THE B.S.E.E. DEGREE

### Freshman Year

| | |
|---|---|
| ENGR 1100 Intro. to Engineering | 1 |
| MATH 1141 Diff. & Integral Calculus I | 4 |
| CHEM 1101 Prin. of Chemistry I | 3 |
| CHEM 1101L Prin. of Chemistry Lab I | 1 |
| ENGL 1101 English Composition | 3 |
| Humanities or Social Science | 3 |
| | 15 |
| EEGR 1102 Computer Language I & Graphics | 2 |
| MATH 1142 Diff. & Integral Calculus II | 4 |
| PHYS 2221 Dynamics | 3 |
| PHYS 2221L Experimental Physics I | 1 |
| ENGL 1102 | 3 |
| Humanities or Social Science | 3 |
| | 16 |

### Sophomore Year

| | |
|---|---|
| EEGR 2111 Network Theory I | 3 |
| EEGR 2101 Computer Language II | 2 |
| EEGR 2181 Switch. Theory & Logic Design I | 3 |
| PHYS 2231 Electricity & Magnetism | 3 |
| MATH 2171 Differential Equations | 3 |
| ECON 2101 or 2102 Micro or Macro Economics | 3 |
| | 17 |
| EEGR 2112 Network Theory II | 3 |
| EEGR 2152 Laboratory I | 2 |
| ESGR 2143 Statics & Strength of Materials | 3 |
| PHYS 2241 Intro. to Modern Physics | 3 |
| MATH 2141 Diff. & Integral Calculus III | 3 |
| Humanities or Social Science | 3 |
| | 17 |

### Junior Year

| | |
|---|---|
| EEGR 3111 System Analysis I | 3 |
| EEGR 3151 Laboratory II | 2 |
| EEGR 3101 Comp. Utilization in Egr. | 3 |
| EEGR 3131 Fund. of Electronics & Semiconductors | 3 |
| EEGR 3121 Intro. to Electromagnetic Fields | 3 |
| Humanities or Social Science | 3 |
| EEGR 3199 Professional Development | 0 |
| | 17 |
| EEGR 3112 System Analysis II | 3 |
| EEGR 3152 Laboratory III | 2 |
| EEGR 3142 Electromagnetic Devices | 3 |
| EEGR 3132 Electronics | 3 |
| EEGR 3122 Electromagnetic Waves | 3 |
| Mathematics Elective | 3 |
| EEGR 3199 Professional Development | 0 |
| | 17 |

### Senior Year

| | |
|---|---|
| EEGR 4111 Control Systems I | 3 |
| EEGR 3251 Senior Design I | 2 |
| EEGR 4xxx | 3 |
| Technical Elective | 3 |
| Technical Elective | 3 |
| Science Elective | 3 |
| EEGR 3199 Professional Development | 0 |
| | 17 |
| EEGR 4112 Control Systems II | 3 |
| EEGR 3252 Senior Design II | 3 |
| MEGR 3111 Thermodynamics I | 3 |
| Technical Elective | 3 |
| Technical Elective | 3 |
| EEGR 3199 Professional Development | 1 |
| | 16 |

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

## ELECTRICAL ENGINEERING (EEGR)

### Courses for Undergraduates

(102) **EEGR 1102. Computer Language and Graphics. (2)** Corequisite or prerequisite: MATH 1141. Introduction to the concepts and techniques of engineering graphics using computational methods and computer graphics. Introductory computer programming using electrical engineering applications. *(Fall, Spring, Summer)*

(201) **EEGR 2101. Computer Language II. (2)** Prerequisite: EEGR 1102 with a grade of *C* or better. Introduction to a second high level language, algorithms, flowcharting, use of engineering software packages, engineering subroutines and program documentation. *(Fall, Spring)*

(211) **EEGR 2111. Network Theory I. (3)** Corequisite: EEGR 2101. Prerequisite or corequisite: PHYS 2231 and MATH 2171. Introduction to Kirchoff's and terminal equations. Circuit analysis techniques and network theorems. Singularity functions and signals. Transient and natural response of first and second order networks. State variable analysis. *(Fall, Spring) (Evenings)*

(212) **EEGR 2112. Network Theory II. (3)** Prerequisite: EEGR 2111 with a grade of *C* or better and MATH 2171. Continuation of EEGR 2111. Introduction of sinusoidal steady state. Time frequency domain analysis. Power and energy. Two port networks. Fourier series. Introduction to Fourier and Laplace transforms. *(Fall, Spring, Summer) (Evenings)*

(258) **EEGR 2151. Basic Electrical Engineering Laboratory. (1)** Prerequisite or corequisite: EEGR 2163. Principles and operation of electrical circuits, basic electronic devices and energy conversion devices. Not open to Electrical Engineering majors. Three laboratory hours a week. *(On demand)*

(254) **EEGR 2152. Laboratory I. (2)** Prerequisite: ENGL 1101. Prerequisite or corequisite: EEGR 2112. The first in a series of laboratory-oriented courses designed to develop an understanding of the principles and theory of parameter measurement and instrumentation. Instruction in the use of laboratory equipment and development and application of experimental techniques. One hour of lecture and three laboratory hours per week. *(Fall, Spring) (Evenings)*

(261) **EEGR 2161. Basic Electrical Engineering I. (3)** Corequisite or prerequisite: PHYS 2231. Fundamental concepts and methods of analysis used in electrical engineering. Topics include: terminal characteristics of devices, analysis of D.C. and A.C. circuits, elementary operation of electronic devices. Not open to Electrical Engineering majors. *(Fall) (Evenings)*

(262) **EEGR 2162. Basic Electrical Engineering II. (3)** Prerequisite: EEGR 2161 with a grade of *C* or better. Continuation of EEGR 2161 covering electronics, magnetic fields, electromagnetic and electromechanical devices. Not open to Electrical Engineering majors. *(Spring) (Evenings)*

(268) **EEGR 2163. Electrical Engineering Survey. (3)** Prerequisite: MATH 1142. Corequisite: PHYS 2231. Fundamental concepts and methods of analysis used in electrical engineering. Topics include: terminal characteristics of devices, analysis of D.C. and A.C. circuits, elementary operation of electronic devices and electromechanical energy conversion devices. Not open to Electrical Engineering majors. *(On demand)*

(282) **EEGR 2181. Logic System Design I. (3)** Prerequisite or corequisite: EEGR 1102 or permission of Department. Introduction to Boolean algebra; mixed logic; design of combinational circuits; introduction to sequential systems; MSI building blocks; includes laboratory design projects. *(Fall, Spring)*

(284) **EEGR 2182. Logic System Design II. (3)** Prerequisite: EEGR 2181 with a grade of *C* or better or permission of the Department. Continuation of EEGR 2181. Multi-input and output controllers using top down design; logic design using MSI and LSI. Bit-slice controllers; including laboratory design project and techniques. *(Spring, Summer)*

(490) **EEGR 3090. Special Topics in Electrical Engineering. (1-4)** Prerequisite: consent of the Department. The course builds upon and synthesizes knowledge from the engineering science, mathematics and physical sciences stem of the core curriculum. The specific topics teach engineering analysis, synthesis and design, while simultaneously affording an opportunity for the students to investigate an area of specialization. May be repeated for credit. *(On demand)*

(381) **EEGR 3101. Computer Utilization in Electrical Engineering. (3)** Prerequisite: EEGR 2112 or EEGR 2152 with a grade of *C* or better or consent of the Department. The application of the digital computer to engineering analysis and design problems. Computer-aided analysis and design. Introduction to language and applications. *(Fall, Spring)*

(311) **EEGR 3111. System Analysis I. (3)** Prerequisite: EEGR 2112 with a grade of *C* or better. Analysis of networks under transient and steady state conditions. Topological and matrix formulation. Topological and matrix formulation techniques used in network analysis. Transient and steady state analysis. State variable techniques. Transform methods. Sinusoidal steady state. Network theorems. *(Fall, Spring)*

(312) **EEGR 3112. System Analysis II. (3)** Prerequisite: EEGR 3111 with a grade of *C* or better. A continuation of EEGR 3111 emphasizing system response characteristics in the frequency domain. Introduction to techniques of analysis of continuous and discrete systems. *(Spring, Summer)*

(321) **EEGR 3121. Introduction to Electromagnetic Fields. (3)** Prerequisite: EEGR 2112 with a grade of *C* or better. A study of electric and magnetic fields using the vector formulation. Vector analysis. Electrostatics; potential functions, dielectrics, capacitance, energy and forces associated with electric fields, solution of Laplace's and Poisson's equations. Magnetostatics: vector potential functions, Lorentz forces, hysteresis, magnetic polarization and induction, and energy. Gauss's, Ampere's, Faraday's laws, etc., leading to the Maxwell's equations. *(Fall, Spring)*

(322) **EEGR 3122. Electromagnetic Waves. (3)** Prerequisite: EEGR 3121 with a grade of *C* or better. A study of Maxwell's equations, transmission line theory, plane waves in media, propagation of electromagnetic waves in various media. The phenomena of reflection and refraction at interfaces of two dissimilar materials. Guided electromagnetic waves in coaxial cables and waveguides. *(Spring, Summer)*

(332) **EEGR 3131. Fundamentals of Electronics and Semiconductors. (3)** Prerequisite: EEGR 2112 with a grade of *C* or better. Study of the fundamental concepts of the theory and applications of semiconductor devices. Diode characteristics and applications, including clipping and rectifier circuits. Transistor fundamentals. D.C. biasing and stabilization. Small-signal analysis. Field-effect transistors. Operational amplifier fundamentals. *(Fall, Spring)*

(334) **EEGR 3132. Electronics. (3)** Prerequisite: EEGR 3131 with a grade of *C* or better. Low and high-frequency analysis of transistor amplifiers. Multistage and feedback amplifier design. Stability and oscillation. Operational amplifier design and applications. *(Spring, Summer)*

(436) **EEGR 3134. Industrial Electronics. (3)** Prerequisite: EEGR 3132 with a grade of *C* or better. High power solid state circuits. Topics include choppers, phase controlled rectifiers, triggering devices, inverters and dual converters, limiting and regulating circuits. *(Spring)*

(342) **EEGR 3142. Electromagnetic Devices. (3)** Prerequisite: EEGR 3121 with a grade of *C* or better. Principles of operation and basic design features of electromechanical energy converters. The role of the magnetic field in transformers and electrical machines. Generation of induced voltages. Electromagnetic torque development. Speed control. Circuit models and machine performance. *(Spring, Summer)*

(353) **EEGR 3151. Laboratory II. (2)** Prerequisite: EEGR 2152 with a grade of *C* or better. Prerequisite or corequisite: EEGR 3111. Generating, measuring and recording devices and evaluation of their performance. Use of instrumentation to monitor operating systems and to determine the characteristics and behavior of physical devices. One hour of lecture and three laboratory hours per week. *(Fall, Spring) (Evenings)*

(354) **EEGR 3152. Laboratory III. (2)** Prerequisite: EEGR 3151 with a grade of *C* or better. Prerequisite or corequisite: EEGR 3112. Continuation of EEGR 3151 emphasizing the experimental analysis and design problems. Modeling and model evaluation. One hour of lecture and three laboratory hours per week. *(Spring, Summer) (Evenings)*

(384) **EEGR 3181. Computer Organization and Microprogramming. (3)** Prerequisite: EEGR 2182 with a grade of *C* or better or permission of Department. Microcomputer development and architecture, microprogramming, chip-slice microprocessors. *(Fall, Spring)*

(385) **EEGR 3182. Digital Logic Design. (3)** Prerequisites: EEGR 2181 and 3131, both with a grade of *C* or better. Bipolar and field-effect transistors, switching characteristics, device models, logic families. Memory devices, one-shots, Schmitt triggers, logic gates, drivers. Use of logic analyzers. *(Spring, Summer)*

(387) **EEGR 3183. Programming Languages. (3)** Prerequisite: CSCI 2161. Topics include structure of simple statements and algorithmic languages, list processing, manipulation and text editing, linear-time parsers/interpreters/compilers. Emphasis on application of these concepts to engineering systems including programmable logic controllers and mini/micro computers as process controllers. *(On demand)*

(499) **EEGR 3199. Professional Development. (0)** The purpose of this course is to broaden the student's perception of engineering as a career through participation in various activities related to the engineering profession. Activities consist of attendance at professional society meetings, active participation in student organizations, attendance at visiting lectures and seminars, etc. Course requirements are spread over a two-year period. Students will write two comprehensive reports, each of which concerns one of the above topics. Students must schedule this course during each of the three semesters prior to their last for zero credit and for one credit on a *Pass/No Credit* basis during their final semester. Satisfactory completion of this course is required for graduation for all Electrical Engineering majors. *(Fall, Spring)*

(453) **EEGR 3251. Senior Design I. (2)** Prerequisite: EEGR 3152 with a grade of *C* or better. Corequisite: senior standing in engineering. A project-oriented course stressing the planning and design of experiments to support the student's project. Formation of the design problem and specifications. *(Fall)*

(454) **EEGR 3252. Senior Design II. (3)** Prerequisite: EEGR 3251 with a grade of *C* or better. A continuation of EEGR 3251 consisting of project development and analysis, culminating in a written and oral presentation. *(Spring)*

(492) **EEGR 3890. Individualized Study. (1-3)** Prerequisite: consent of the Department. Supervised individual study within an area of a student's particular interest which is beyond the scope of existing courses. May be repeated for credit. *(On demand)*

(491) **EEGR 3990. Undergraduate Research. (1-4)** Prerequisite: consent of the Department. This course involves the independent study of theoretical and/or experimental problems in the specialized area of engineering analysis and design. The student can pursue some particular area or problem to a depth much greater than can be undertaken within the scope of existing courses. May be repeated for credit. *(On demand)*

**Courses for Advanced Undergraduates and Graduate Students**

(411) **EEGR 4111. Control Systems Theory I. (3) (3G)** Prerequisite: EEGR 3112 with a grade of *C* or better. Transfer functions, block diagrams and signal flow graphs. Feedback control system characteristics. The performance and stability of feedback systems using root locus and frequency response methods. Time domain analysis of control systems. The design and compensation of control systems. *(Fall)*

(412) **EEGR 4112. Control Systems Theory II. (3) (3G)** Prerequisite: EEGR 4111 with a grade of *C* or better. State space techniques and useful state space methods. System stability. Controllability and observability of linear systems. The formulation of the state equations for discrete-time systems and the analysis of these systems by matrices. Analysis of nonlinear systems. Optimal control systems studies. *(Spring)*

(313) **EEGR 4113. Modeling and Analysis of Dynamic Systems. (3) (3G)** Prerequisite: EEGR 3112 or permission of the Department. Models and dynamical properties of mechanical, thermal, and fluid systems, utilizing by analogy the properties of electrical circuit theory. Emphasis on the formulation of circuit models and the development of terminal equations of system components. Dynamic response to step, pulse, and sinusoidal driving functions using Laplace transforms. Sinusoidal steady-state and frequency response of systems. *(On demand)*

(314) **EEGR 4114. Topological Aspects of Circuit Theory. (3) (3G)** Prerequisite: EEGR 3112 or permission of the Department. Topological analysis of passive and active networks. Application of topology to switching network. Flow graph techniques in systems analysis. Topological synthesis and other applications. *(On demand)*

(422) **EEGR 4121. Antennas. (3) (3G)** Prerequisite: EEGR 3122 with a grade of *C* or better or permission of the Department. Radiation into free space, the point source, thin linear antenna, arrays of linear elements, aperture antennas, impedance, methods of feeding, matching and termination. Antenna systems. *(Fall)*

(426) **EEGR 4122. Acoustics. (3) (3G)** Prerequisite: EEGR 3122 or PHYS 4231. Vibrations and simple vibrating systems; radiating systems; plane waves of sound; dynamic analogies, microphones and other acoustic transducers; acoustic measurements. *(Spring)*

(435) **EEGR 4131. Linear Integrated Electronics. (3) (3G)** Prerequisite: EEGR 3132 with a grade of *C* or better. Application of integrated circuit devices to the generation, control and processing of analog signals. Power supply regulators, analog switches, waveform generators, and active filters. Modulation and demodulation. *(Fall)*

(411) **EEGR 4141. Power System Analysis I. (3) (3G)** Prerequisite: EEGR 3142 with a grade of *C* or better. Representation of power system components for analysis studies. Transmission line parameters. Network equations. Load flow analysis and numerical methods. *(Fall)*

(442) **EEGR 4142. Power System Analysis II. (3) (3G)** Prerequisite: EEGR 4141 with a grade of *C* or better. Economic operation of power systems. Short circuit studies. Symmetrical components. Transient stability analysis. *(Spring)*

(443) **EEGR 4143. Electrical Machinery. (3) (3G)** Prerequisite: EEGR 3142 with a grade of *C* or better. Advanced theory of transformers and rotating. Machines; harmonic and saturation effects on machine performance. Unbalanced operation and transient conditions. *(On demand)*

(486) **EEGR 4182. Digital System Testing. (3) (3G)** Prerequisite: EEGR 2181 with a grade of *C* or better or permission of Department. System testing; Boolean difference; D-algorithm; checking experiments; redundancy, computer-aided digital test systems. *(Spring)*

THE 5000-LEVEL COURSES ARE FIRST-YEAR GRADUATE COURSES ALTHOUGH SOME ADVANCED SENIORS MAY ENROLL WITH PERMISSION OF THE DEPARTMENT. FOR COMPLETE COURSE DESCRIPTIONS, SEE PAGES 388-390.

# Department of Engineering Technology

*Chairperson:* Associate Professor Priebe
*Associate Professors:* Christie, Liu, Mobley, Wang, Willis, Wright, Young
*Assistant Professors:* Allison, Ayala, Blue, Patten
*Lecturers:* Barry, Ferman, Schmucker
*Lecturers (Part-time):* Barrier, Childress, Cornelius, Cundy, Fiss, Galleher, Grady, Meacham, Raymond, Richardson, Robinson, Russell, Safar, Silver, Warren

Engineering and technical education have undergone considerable change in the last 25 years. The complexities of space exploration, nuclear power, communications systems, environmental control, information processing, transportation systems and manufacturing have demanded a great increase in the involvement of professional engineers in theoretical and analytical work. This has resulted in a much greater emphasis upon research and development, science and mathematics in professional engineering curricula. At the same time, after the more complex devices and systems have been engineered, the design, development and operation require the sophisticated knowledge and skills of practitioners of what might be called the "applied engineering sciences." Programs dedicated to fulfilling this need are now developing rapidly over the United States. The aim and content of these programs are distinctly different from professional engineering curricula.

To provide the appropriate distinction from both the theoretical-professional engineers and from the engineering technicians who are graduated from the two-year technical institutes, the designation "engineering technologist" is being used throughout the United States for the graduates of four-year applied engineering or "engineering technology" curricula.

The two-year technical institute programs in North Carolina and in many other states provide an excellent foundation for four-year baccalaureate engineering technology curricula. Therefore, the Engineering Technology program at UNCC is limited to the junior and senior years, and an Associate in Applied Science degree is required for admission.

UNCC offers four curricula leading to a Bachelor of Engineering Technology (B.E.T.) degree: **Civil Engineering Technology** (emphases in general Civil and Construction); **Electrical Engineering Technology** (emphases in Electronics and Computer/Electronics); **Manufacturing Engineering Technology** (emphases in Electrical, Mechanical, Industrial, Manufacturing/Automation and Manufacturing/Computer Engineering Technology); and **Mechanical Engineering Technology** (emphases in General Mechanical and Industrial). The tracks of study in Civil Engineering Technology, Electrical Engineering Technology, and Mechanical Engineering Technology are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology.

## BACHELOR OF ENGINEERING TECHNOLOGY (B.E.T.)

**Requirements for Admission.** A student who has graduated from a technical institute or the technical division of a junior college must meet the following requirements to enter the Engineering Technology program at UNCC:

1. An Associate in Applied Science degree in one of the following fields:

   Civil, Construction, Electrical, Electronics, Environmental, Computer, Instrumentation, Industrial, Manufacturing Automation, Mechanical Engineering Technology, Architectural, Building Construction, Design and Drafting, or Surveying Technology.

2. An overall grade point average of at least 2.2 except for the requirement of at least 2.5 for entry into the Manufacturing Engineering Technology track (based on the 4.0 system) on all courses taken at the technical institute, and

3. Satisfactory completion of the prerequisite courses for the track which the student plans to enter (see pages 296-297).

There is considerable variance in the contents of technical institute programs throughout the United States. Should this result in entrance deficiencies, the student can usually remove these deficiencies at Central Piedmont Community College in Charlotte prior to admission to UNCC, or during the first year at UNCC.

**Residence Requirements.** A student must earn the last 30 semester hours of credit toward the degree and the last 12 semester hours of work in the major at this University to satisfy residence requirements.

**Grade Point Requirements.** In order to be eligible for the B.E.T. degree, students must attain a minimum GPA of 2.0 in: (1) all courses attempted at UNCC, and (2) all courses attempted in the College of Engineering.

**Course Requirements.** Prerequisite courses for entering the Engineering Technology program, normally taken at a technical institute or junior college, are listed on the pages that follow.

In addition, the following UNCC courses are required for the B.E.T. degree:

| *Title* | *Semester Hours* |
|---|---|
| Chemistry 1101 or other Natural Science | 3-4 |
| Computer Science 1100 | 3 |
| Economics 2101 or 2102 | 3 |
| Humanities or Social Science Electives | 9 |
| English 2116 | 3 |
| Major Electives | 3-7 |
| Engineering Analysis | 3-9 |
| Specified courses in major area of study (see pages 298-301) | 26-39 |
| Total | 65-67 |
| Maximum transfer credit for A.A.S. degree | 64 |
| Total number of semester hours required for B.E.T. degree | 129-131 |

**Background Courses Required for Entering the Bachelor of Engineering Technology Program in the Electrical, Mechanical and Civil Tracks**

The student must have satisfactorily completed the following subjects in his or her two-year associate degree program.

**Note:** Planning is in process to change the general education courses required for students entering engineering technology. Consult the Department of Engineering Technology for additional information.

Quarter hours indicated are minima.

| Descriptive Title | Quarter Hours |
|---|---|
| English Composition, Technical Writing and/or Public Speaking | 9 |
| Algebra, Trigonometry and Analytic Geometry with Calculus | 13 |
| *Differential and Integral Calculus | 5 |
| General Physics (with Laboratory) | 8 |
| *Physics or Chemistry (with Laboratory) | 4 |
| *Humanities or Social Sciences | 6 |
| *Other Subjects | 3 |
| Technical Courses in Major Area | 48** |
| Total | 96 |

**Electrical**
Drafting
D.C. Circuits
A.C. Circuits
Electronic Measurements
Semiconductor Devices
Digital Circuits (6 Q.H.'s)
Semiconductor Circuits
Communication Electronics or
Control Systems or
Micro Computers

**Mechanical**
Drafting
Machine Processes
Statics
*Metallurgy
Strength of Materials
Kinematics or Mechanisms
Design Drafting or Machine Design
Basic Electrical Circuits
(or Physics III, Electricity)

**Industrial (Emphasis of Mechanical)**
Drafting
Statics and Strength of Materials
Production Planning
Work Measurement, or Time and Motion,
or Methods Analysis

**Civil**
Drafting
*Surveying
Statics
Strength of Materials
*Properties of Concrete

**Construction (Emphasis of Civil)**
Architectural Drafting or Drafting
Architectural Engineering
Materials and Methods
*Surveying
Statics and Strength of Materials
Construction Estimates and Costs
Codes, Contracts and Specifications
*Properties of Concrete

*These courses may be taken at UNCC or at a local two-year college.
**The 48 hours of major work must include courses covering all of the subjects in any one of the areas shown on this page.

## Background Courses Required for Entering the Bachelor of Engineering Technology Program Track in Manufacturing Engineering Technology

The student must have satisfactorily completed the following subjects in his or her two-year associate degree program.

**Note:** Planning is in process to change the general education courses required for students entering engineering technology. Consult the Department of Engineering Technology for additional information.

Quarter hours indicated are minima.

### COMMON PREREQUISITES

| | Quarter Hours |
|---|---|
| English, Tech. Writing and/or Public Speaking | 9 |
| Algebra, Trigonometry, and Analytic Geometry with Calculus | 13 |
| Differential and integral Calculus | 5 |
| General Physics with Laboratory | 8 |
| Physics or Chemistry with Laboratory | 4 |
| Computer Programming | 3 |
| Humanities or Social Sciences | 6 |
| Subtotal | 48 |

### PREREQUISITE TECHNICAL COURSES (Minimum)

#### ELET Emphasis

| | |
|---|---|
| Electrical Drafting | 3 |
| D.C. Circuits | 3 |
| A.C. Circuits | 3 |
| Electronic Measurements | 3 |
| Semiconductor Devices | 3 |
| Digital Circuits | 3 |
| Semiconductor Circuits | 3 |
| Communication Electronics or Control Systems or Micro Computers | 3 |
| Subtotal | 24 |
| Other Technical Courses | 24 |
| Total Lower Division (Minimum) | 96 |

#### MEET Emphasis

| | |
|---|---|
| Machine Drafting | 3 |
| Machine Processes | 3 |
| Statics | 3 |
| Kinematics or Mechanisms | 3 |
| Design Drafting or Machine Design | 3 |
| Metallurgy | 3 |
| Strength of Materials | 3 |
| Basic Electrical Circuits | 3 |
| Fluid Mechanics or Fluid Power | 3 |
| Subtotal | 27 |
| Other Technical Courses | 21 |
| Total Lower Division (Minimum) | 96 |

#### INET Emphasis

| | |
|---|---|
| Machine Drafting | 3 |
| Production Planning | 3 |
| Work Measurement or Methods Analysis | 3 |
| Statistics | 3 |
| Plant Layout | 3 |
| Machine Processes | 3 |
| Metallurgy | 3 |
| Subtotal | 21 |
| Other Technical Courses | 27 |
| Total Lower Division (Minimum) | 96 |

#### Manufacturing, Automation or Robotics Emphasis

| | |
|---|---|
| Drafting or Design | 3 |
| Machine/Manufacturing Processes | 3 |
| Metallurgy | 3 |
| Electrical Circuits or Electrical Measurements | 3 |
| Manufacturing, Automation or Robotics | 6 |
| Computer Programming/Microprocessors or Numerical Control | 3 |
| Subtotal | 21 |
| Other Technical Courses | 27 |
| Total Lower Division (Minimum) | 96 |

#### Computer Technology Emphasis

| | |
|---|---|
| Intro. to Computers/Micros | 3 |
| Programming | 3 |
| Electronics for Computers | 6 |
| Computer Aided Design | 3 |
| Industrial Computer Applications | 3 |
| Process Control | 3 |
| Micro Interfacing | 3 |
| Subtotal | 24 |
| Other Technical Courses | 24 |
| Total Lower Division (Minimum) | 96 |

## CURRICULUM OUTLINE
## FOR THE ENGINEERING TECHNOLOGY MAJOR
## LEADING TO THE B.E.T. DEGREE

### CIVIL ENGINEERING TECHNOLOGY PROGRAM

#### Junior Year

| | |
|---|---|
| CIET 3111 Structural Analysis I | 3 |
| CIET 3121 Foundations and Earthwork | 3 |
| CIET 3151 Soil Testing Laboratory | 1 |
| ENGL 2116 Introduction to Technical Communication | 3 |
| CHEM 1101 Principles of Chemistry or ESCI 1102 Earth Science Geology (a) | 4 |
| Humanities or Social Science Elective (1000 level) (b) | 3 |
| | 17 |

| | |
|---|---|
| CIET 3112 Structural Analysis II | 3 |
| CIET 3132 Hydraulics | 3 |
| EGET 3171 Engineering Analysis I | 3 |
| ECON 2101 or 2102 Principles of Economics—Macro or Micro (f) | 3 |
| CSCI 1100A Algorithmic Languages I (FORTRAN) (e) | 3 |
| CIET 3155 Construction Materials Laboratory | 1 |
| | 16 |

#### Senior Year

| | |
|---|---|
| CIET 3212 Structural Steel Design | 3 |
| CIET 3262 Introduction to Environmental Engineering | 3 |
| EGET 3273 Engineering Analysis III | 3 |
| Major Elective (c) | 3 |
| Humanities or Social Science Elective (2000 level) (b) | 3 |
| | 15 |

| | |
|---|---|
| CIET 3211 Reinforced Concrete Design | 3 |
| CIET 3241 Highway Design and Construction | 3 |
| Major Elective (c) | 3 |
| Major Elective (Laboratory) (c) | 1 |
| Free Elective (d) | 3 |
| Humanities or Social Science Elective (3000 level) (b) | 3 |
| | 16 |

### CIVIL ENGINEERING TECHNOLOGY PROGRAM
### With Emphasis on Construction Engineering Technology

#### Junior Year

| | |
|---|---|
| CIET 3111 Structural Analysis I | 3 |
| CIET 3121 Foundations and Earthwork | 3 |
| CIET 3151 Soil Testing Laboratory | 1 |
| ENGL 2116 Introduction to Technical Communication | 3 |
| ESCI 1102 Earth Science Geology | 4 |
| Humanities or Social Science Elective (1000 level) (b) | 3 |
| | 17 |

| | |
|---|---|
| CIET 3112 Structural Analysis II | 3 |
| CIET 3132 Hydraulics | 3 |
| EGET 3171 Engineering Analysis I | 3 |
| ECON 2101 or 2102 Principles of Economics—Macro or Micro (f) | 3 |
| CSCI 1100A Algorithmic Languages I (FORTRAN) (e) | 3 |
| | 15 |

#### Senior Year

| | |
|---|---|
| CIET 3212 Structural Steel Design | 3 |
| CIET 3155 Construction Materials Laboratory | 1 |
| CIET 3281 Cost Estimating I | 3 |
| EGET 3243 Project Management Technology | 3 |
| Major Elective (c) | 3 |
| Humanities or Social Science Elective (2000 level) (b) | 3 |
| | 16 |

| | |
|---|---|
| CIET 3211 Reinforced Concrete Design | 3 |
| MEET 3293 Mechanical, Plumbing, and Electrical Systems for Buildings | 3 |
| Major Elective (c) | 3 |
| Major Elective (Laboratory) (c) | 1 |
| Free Elective (d) | 3 |
| Humanities or Social Science Elective (3000 level) (b) | 3 |
| | 16 |

**NOTE:** Footnotes pertaining to the above outlines are given on page 302.

## CURRICULUM OUTLINE
## FOR THE ENGINEERING TECHNOLOGY MAJOR
## LEADING TO THE B.E.T. DEGREE

### ELECTRICAL ENGINEERING TECHNOLOGY PROGRAM
**With Emphasis on Computer Engineering Technology**

**Junior Year**

| | | | |
|---|---|---|---|
| ELET 3153 ELET Laboratory. I | 1 | ELET 3114 Anal. of Linear Ntwks. II | 3 |
| ELET 3183 Digital Logic Design | 3 | ELET 3112 Semiconductors | 3 |
| EGET 3171 Engineering Analysis I | 3 | ELET 3156 ELET Laboratory II | 1 |
| CSCI 1100 Algorithmic Languages (e) | 3 | EGET 3172 Engineering Analysis II | 3 |
| CHEM 1101 Principles of Chemistry (a) | 3 | ECON 2101 or 2102 Principles of Economics—Macro or Micro (f) | 3 |
| ELET 3113 Analysis of Linear Ntwks. I | 3 | Humanities or Social Science (b) | 3 |
| | 16 | | 16 |

**Senior Year**

| | | | |
|---|---|---|---|
| ELET 3281 Computer Design | 3 | ELET 3212 Active Networks II | 3 |
| ELET 3255 ELET Laboratory III | 1 | ELET 3256 ELET Laboratory IV | 1 |
| ELET 3211 Active Networks I | 3 | ELET 3275 Integrated Circuit App. | 3 |
| ELET 3285 Assembly Language Prog. | 3 | ELET 3286 Microcomputer Applications | 3 |
| ENGL 2116 Technical Communication | 3 | Major Elective (c) | 3 |
| Humanities or Social Science (b) | 3 | Humanities or Social Science (b) | 3 |
| | 16 | | 16 |

### ELECTRICAL ENGINEERING TECHNOLOGY PROGRAM
**With Emphasis on Electronics**

**Junior Year**

| | | | |
|---|---|---|---|
| ELET 3153 ELET Laboratory I | 1 | ELET 3114 Anal. of Linear Ntwks. II | 3 |
| ELET 3183 Digital Logic Design | 3 | ELET 3112 Semiconductors | 3 |
| EGET 3171 Engineering Analysis I | 3 | Humanities or Social Science (b) | 3 |
| CSCI 1100 Algorithmic Languages (e) | 3 | EGET 3172 Engineering Analysis II | 3 |
| CHEM 1101 Principles of Chemistry (a) | 3 | ECON 2101 or 2102 Principles of Economics—Macro or Micro (f) | 3 |
| ELET 3113 Analysis of Linear Ntwks. I | 3 | ELET 3156 ELET Laboratory II | 1 |
| | 16 | | 16 |

**Senior Year**

| | | | |
|---|---|---|---|
| ELET 3213 Industrial Electronics | 3 | ELET 3212 Active Networks II | 3 |
| ELET 3257 ELET Laboratory III | 1 | ELET 3258 ELET Laboratory IV | 1 |
| ELET 3211 Active Networks I | 3 | ELET 3222 Automatic Controls | 3 |
| ELET 3285 Assembly Language Prog. | 3 | ELET 3214 Operational Amplifiers | 3 |
| ENGL 2116 Technical Communication | 3 | Major Elective (c) | 3 |
| Humanities or Social Science (b) | 3 | Humanities or Social Science (b) | 3 |
| | 16 | | 16 |

**NOTE:** Footnotes pertaining to the above outlines are given on page 302.

## CURRICULUM OUTLINE
## FOR THE ENGINEERING TECHNOLOGY MAJOR
## LEADING TO THE B.E.T. DEGREE

### MECHANICAL ENGINEERING TECHNOLOGY PROGRAM

#### Junior Year

| | |
|---|---|
| MEET 3123 Strength of Materials | 3 |
| MEET 3133 Fluid Mechanics | 3 |
| MEET 3152 Stress Analysis Laboratory | 1 |
| EGET 3171 Engineering Analysis I | 3 |
| CSCI 1100 Algorithmic Languages (e) | 3 |
| CHEM 1101 Principles of Chemistry (a) | 3 |
| | 16 |
| MEET 3114 Dynamics | 4 |
| MEET 3213 Machine Design I | 3 |
| MEET 3164 Instrumentation and Controls | 4 |
| MEET 3143 Thermodynamics | 3 |
| MEET 3151 Fluid Mechanics Laboratory | 1 |
| | 15 |

#### Senior Year

| | |
|---|---|
| MEET 3232 Senior Design Project I | 2 |
| MEET 3252 Thermodynamics Lab | 1 |
| MEET 3251 Instrumentation Laboratory | 1 |
| EGET 3273 Engineering Analysis III | 3 |
| Major Elective | 3 |
| INET 3223 Engineering Economics | 3 |
| Humanities or Social Science (b) | 3 |
| | 16 |
| MEET 3242 Senior Design Project II | 2 |
| ECON 2102 or 2102 Principles of Economics—Macro or Micro (f) | 3 |
| Major Elective (c) | 3 |
| Humanities or Social Science (b) | 3 |
| Humanities or Social Science (b) | 3 |
| ENGL 2116 Technical Communication | 3 |
| | 17 |

### MECHANICAL ENGINEERING TECHNOLOGY PROGRAM
#### With Emphasis on Industrial Engineering Technology

This program is offered only as a part-time evening program. With due regard for prerequisites, and by taking two courses per semester (including summer), it should be possible to complete the program in four years, essentially in the sequence shown.

| | |
|---|---|
| EGET 3171 Engineering Analysis I | 3 |
| MEET 3133 Fluid Mechanics | 3 |
| CSCI 1100 Algorithmic Languages (e) | 3 |
| INET 3103 Methods Analysis | 3 |
| INET 3151 Methods Analysis Lab | 1 |
| Humanities or Social Science | 3 |
| MATH 1220 Elements of Statistics | 3 |
| MEET 3123 Strength of Materials | 3 |
| MEET 3151 Fluid Mechanics Laboratory | 1 |
| MEET 3114 Dynamics | 4 |
| INET 3123 Production Control Systems | 3 |
| INET 3223 Engineering Economics | 3 |
| MATH 2111 Introduction to Operations Research | 3 |
| ENGL 2116 Technical Communication | 3 |
| ECON 2101 or 2102 Principles of Economics—Macro or Micro (f) | 3 |
| INET 3203 Plant Layout | 3 |
| INET 3251 Plant Layout Lab | 1 |
| Humanities or Social Science (b) | 3 |
| GEOG 3150 Manufacturing Geography | 3 |
| INET 3213 Quality Control | 3 |
| INET 3211 Directed Projects | 1 |
| Major Electives | 6 |
| Humanities or Social Science (b) | 3 |
| | 65 |

**NOTE:** Footnotes pertaining to the above outlines are given on page 302.

## CURRICULUM OUTLINE
## FOR THE ENGINEERING TECHNOLOGY MAJOR
## LEADING TO THE B.E.T. DEGREE

### MANUFACTURING ENGINEERING TECHNOLOGY PROGRAM

| Lower Division Program in which A.A.S. Earned | Semester Hours EGET | MEET | INET | Mfg/Auto | COMP |
|---|---|---|---|---|---|
| **COMMON CORE COURSES** | | | | | |
| Chemistry—CHEM 1101 | 3 | 3 | 3 | 3 | 3 |
| Engineering Cooperative Education—ENGR 3590, 3695 | 3 | 3 | 3 | 3 | 3 |
| Humanities/Social Science Electives (b) | 9 | 9 | 9 | 9 | 9 |
| Economics—ECON 2101 or 2102 (f) | 3 | 3 | 3 | 3 | 3 |
| Engineering Economics—INET 3223 | 3 | 3 | 3 | 3 | 3 |
| Algorithmic Languages—CSCI 1100 (e) | 3 | 3 | 3 | 3 | 3 |
| Engineering Analysis I—EGET 3171 | 3 | 3 | 3 | 3 | 3 |
| Engineering Analysis II—EGET 3172 | 3 | - | - | - | - |
| Engineering Analysis III—EGET 3273 | - | 3 | 3 | 3 | 3 |
| Manufacturing Processes—MFET 3111 | 3 | 3 | - | - | 3 |
| Computer Integrated Mfg. (CIM)—MFET 3131 | 3 | 3 | 3 | 3 | 3 |
| CIM Laboratory—MFET 3251 | 2 | 2 | 2 | 2 | 2 |
| Statistics—MATH 1220 | 3 | 3 | - | 3 | 3 |
| Quality Control—INET 3133 | 3 | 3 | 3 | 3 | 3 |
| Senior Design Project—MEET 3232, 3242 | 4 | 4 | 4 | 4 | 4 |
| Technical Writing—ENGL 2116 | 3 | 3 | 3 | 3 | 3 |
| Subtotal | 51 | 51 | 45 | 48 | 51 |
| **SPECIALIZED CORE COURSES** | | | | | |
| **ELET** | | | | | |
| Circuit Analysis—ELET 3113, 3114 | 6 | | | | |
| Digital Logical Design—ELET 3183 | 3 | | | | |
| Semiconductor Circuits—ELET 3112 | 3 | | | | |
| ELET Laboratory I—ELET 3153 | 1 | | | | |
| ELET Laboratory II—ELET 3156 | 1 | | | | |
| **MEET/INET/MFET-ELEC/AUTOMATION** | | | | | |
| Instrumentation and Controls—MEET 3164 | - | 4 | 4 | 4 | 4 |
| Digital Process Control—MFET 3181 | - | 3 | - | 3 | 3 |
| Instrumentation Laboratory—MEET 3251 | - | 1 | 1 | 1 | 1 |
| Operations Management—BUSN 3100 | - | - | 3 | 3 | - |
| INET—MEET Lab Course | - | 1 | 1 | 1 | 1 |
| **Directed Electives** | | | | | |
| Other Engineering Technology (EGET) Courses | 1 | 3 | 6 | 3 | 3 |
| Hours from the following: | * | 3 | 6 | 3 | 3 |
| Operations Management—BUSN 3100 | * | * | N/A | N/A | N/A |
| Intro. to Industrial Psychology—PSYC 2171 | * | * | * | * | * |
| Data Base Design—CSCI 2161, 3160 | * | * | * | * | * |
| Elements of Statistics II—MATH 1123 | * | * | * | * | * |
| Any 2000 Level/Higher Mathematics Course | * | * | * | * | * |
| Senior Seminar in Industrial Psychology—PSYC 4670 | * | * | * | * | * |
| Upper Division Total | 66 | 66 | 66 | 66 | 66 |
| Curriculum Total | 130 | 130 | 130 | 130 | 130 |

**NOTE:** Footnotes pertaining to the above outline are given on page 302.

## NOTES REGARDING CURRICULUM OUTLINES

### FOOTNOTES

a. A student who has previously taken a college-level course in general chemistry shall substitute for this requirement another course in chemistry, physics, biology or earth science as shown in the table below.

| **Students who have previously taken:** | **Shall take at UNCC:** |
|---|---|
| 3 quarters of physics and no chemistry | Chemistry 1101 |
| 2 quarters of physics and 1 quarter of chemistry | Physics 1102 (Physics 1101 with permission) |
| 3 quarters of physics and at least 1 quarter of chemistry (4 quarter hours) | Earth Science 1101 or 1102 Biology 1101 or Physics 1130 |

b. Humanities and social science electives must be selected from a current list of approved courses which is maintained in the departmental office and shall include a minimum of one sophomore and one junior course.

c. Major electives must be upper level courses offered by the College of Engineering and related to the student's field of specialization.

d. Free electives are intended to provide the student an opportunity:

1. to take an additional departmental major course,
2. to investigate other areas of interest outside the College of Engineering,
3. to support an upper-division sequence in the humanities or social science, or
4. to study a foreign language.

Courses selected as free electives should normally be sophomore or higher and must be approved by the student's adviser after the student has outlined the sequence of electives that he or she plans to pursue. No course may be taken for elective credit that covers material for which the student has received credit in another course. A maximum of three semester hours credit is allowed in physical education.

e. FORTRAN, unless the student has completed a FORTRAN course in a two-year program, in which case Pascal or other high level scientific/engineering languages may be taken.

f. Students who have taken an economics course equivalent to ECON 2101 or 2102 in their two-year programs shall select a social science or humanities course.

**Note:** Planning is in process to change the general education courses required for students entering engineering technology. Consult the Department of Engineering Technology for additional information.

## COURSE DESCRIPTIONS

### ENGINEERING TECHNOLOGY (EGET)

An Engineering Technology course may be used for elective or minor credit by a student in another major only with the prior approval of the student's major department and the Department of Engineering Technology.

(490) **EGET 3000. Special Topics in Engineering Technology. (1-4)** Prerequisite: senior standing in Engineering Technology or consent of the Department. Examination of specific new areas which are emerging in the various fields of engineering technology. The course builds upon the knowledge the students have gained from their engineering technology curriculum. May be repeated for credit. *(On demand)*

(371) **EGET 3171. Engineering Analysis I. (3)** Prerequisites: differential and integral calculus. Methods of solving engineering problems which involve the differentiation and integration of algebraic, trigonometric and logarithmic functions; use of integral tables. *(Fall, Spring, Summer)*

(471) **EGET 3172. Engineering Analysis II. (3)** Prerequisite: EGET 3171. A study of constant coefficient linear differential equations, including nonhomogeneous equations; Laplace transforms and the use of Laplace transform tables; applications to the analysis of dynamic systems. *(Spring, Summer)*

(481) **EGET 3233. Computer Graphic Technology. (3)** Study of computer graphics as a design drafting tool. Using computer driven plotters and digitizers to prepare engineering drawings and illustrations. *(On demand)*

(482) **EGET 3243. Project Management Technology. (3)** Use of CPM and other network analysis methods for planning, managing and controlling projects. *(Fall)*

(473) **EGET 3273. Engineering Analysis III. (3)** Prerequisites: CSCI 1100 and EGET 3171. Elementary numerical methods for the solution of engineering problems on the digital computer. Emphasis on applications to civil and mechanical engineering technology, using both commercial and student written programs. *(Fall)*

### CIVIL ENGINEERING TECHNOLOGY (CIET)

(311) **CIET 3111. Structural Analysis I. (3)** Prerequisite: elementary courses in statics and strength of materials. Basic concepts and principles of structural analysis relating to beams, trusses and frame structures. Analysis of statically determinate structures under fixed and moving loads, influence lines for moving loads. Approximate analysis of indeterminate structures. Emphasis on practical aspects of structural analysis. *(Fall, Spring)*

(312) **CIET 3112. Structural Analysis II. (3)** Prerequisite: CIET 3111. Deflection of structures. Analysis of statically indeterminate structures using the methods of three-moments, consistent distortions, slope deflection and moment-distribution. An introduction to matrix methods of structural analysis. *(Spring, Summer)*

(321) **CIET 3121. Foundations and Earthwork. (3)** Study of basic design and construction of foundations. Background theories are generally introduced in concise forms as formulas or charts. Emphasis on practical aspects of foundation design and earthwork construction. *(Fall)*

(332) **CIET 3132. Hydraulics. (3)** A study of the fundamental principles of hydraulics and their applications in engineering practice, including the fundamentals of fluid flow through orifices, tubes and pipes, in open channels, and over weirs. *(Spring)*

(351) **CIET 3151. Soil Testing Laboratory. (1)** Prerequisite or corequisite: CIET 3121. A laboratory that is designed to familiarize the student with the common laboratory soil tests and analysis procedures with emphasis on the significance of the various tests, the testing procedures and the detailed computations. Three laboratory hours per week. *(Fall)*

(354) **CIET 3154. Asphalt and Asphalt Mixtures Laboratory. (1)** Study of physical properties of asphalt, of aggregates and their combinations, principles and practice in the design, construction and control of asphalt mixtures; laboratory tests for asphalts, aggregates and mixture design including specimen preparation and stability evaluation. Three laboratory hours per week. *(Fall)*

(355) **CIET 3155. Construction Materials Laboratory. (1)** A review of applicable standard specifications and methods of testing a variety of construction materials. Three laboratory hours per week. *(Fall, Spring)*

(411) **CIET 3211. Reinforced Concrete Design. (3)** Prerequisite or corequisite: CIET 3112. Design of rectangular beams, T-beams, columns, reinforced concrete floor systems and reinforced concrete footings, according to the ACI code. Quality control of concrete and structural inspection. *(Spring)*

(412) **CIET 3212. Structural Steel Design. (3)** Prerequisite: CIET 3112. Design of beams and columns, floor framing, tension and compression members, bolted and welded connections, according to AISC specifications. *(Fall)*

(413) **CIET 3213. Wood Structural Technology. (3)** Prerequisite: CIET 3111. Design of floors, beams, columns and trusses of both solid and glued laminated wood; includes wood joints and concrete forms. *(Spring)*

(441) **CIET 3241. Highway Design and Construction. (3)** Introduction to highway planning, economic considerations and traffic engineering. Design and construction of modern highways including grade separations and interchanges. *(Spring)*

(442) **CIET 3242. Pavement Design. (3)** Prerequisite: CIET 3241. Study of stresses in flexible and rigid pavements, and properties of pavement components. Design of rigid and flexible pavements. Discussion of pavement performance and failures and of pavement strengthening. *(On demand)*

(452) **CIET 3252. Environmental Laboratory. (1)** Prerequisite or corequisite: CIET 3262. Laboratory on the analysis of water and sewage and problems related to environmental control. Three laboratory hours per week. *(Fall)*

(453) **CIET 3253. Construction Engineering Technology Field Laboratory. (1)** Prerequisite: senior standing. A synthesis of prior work, using fundamental principles as applied in a directed project. Three laboratory hours per week. *(Spring)*

(462) **CIET 3262. Introduction to Environmental Engineering Technology. (3)** Prerequisite: CIET 3132. Study of water supply, treatment and distribution and liquid-waste disposal systems. *(Fall)*

(481) **CIET 3281. Cost Estimating I. (3)** Methods used to estimate costs of construction activities. Develops the methods and procedures for preparing quantity surveys and to estimate labor and equipment requirements. *(Fall)*

(482) **CIET 3282. Cost Estimating II. (3)** Prerequisite: CIET 3281. Estimating techniques applied to project work. Topics include subcontractors, plant and overhead costs, profit and bidding. *(Spring)*

## ELECTRICAL ENGINEERING TECHNOLOGY (ELET)

(312) **ELET 3112. Semiconductors. (3)** Prerequisites or corequisites: ELET 3113 and CHEM 1101. Atomic structure; properties of semiconductor materials; diodes, bipolar transistors; integrated circuit fabrication; field-effect transistors. *(Spring)*

(313) **ELET 3113. Analysis of Linear Networks I. (3)** Prerequisite or corequisite: EGET 3171 or MATH 1120A. Resistive circuits; current and voltage sources; Kirchoff's laws, network theorems, RC and RL circuits; sinusoidal excitation and phasors; dependent sources. *(Fall, Spring)*

(314) **ELET 3114. Analysis of Linear Networks II. (3)** Prerequisites: ELET 3113 and CSCI 1100. Prerequisite or corequisite: EGET 3172. AC steady state analysis; average power; effective voltage and current; complex impedance concepts; applications of network theorems, frequency response; RLC networks and second order circuits; transformers; application of computers to network problems. *(Spring, Summer)*

**ELET 3153. ELET Laboratory I. (1)** Prerequisites or corequisites: ELET 3113 and 3183. Experiments which support concepts and practice covered in ELET 3113 and 3183. Three laboratory hours per week. *(Fall)*

**ELET 3156. ELET Laboratory II. (1)** Prerequisites or corequisites: ELET 3112 and 3114. Experiments which support concepts and practice covered in ELET 3112 and 3114. Three laboratory hours per week. *(Spring)*

(383) **ELET 3183. Digital Logic Design. (3)** Prerequisite: two-quarter course sequence in digital logic circuits. Design of combinational and sequential digital logic circuits. Minimization methods and state assignment techniques. Circuit implementation using MSI, LSI, and programmable circuits. Introduction to computer architecture. *(Fall, Spring)*

(411) **ELET 3211. Active Networks I. (3)** Prerequisites: EGET 3172, ELET 3112 and 3114. Rectifiers; amplifiers analysis; transistor biasing; small signal models; feedback amplifier analysis; amplifier frequency response. *(Fall)*

(412) **ELET 3212. Active Networks II. (3)** Prerequisite: ELET 3211. Amplifier frequency response (continued); feedback amplifier frequency response; operational amplifiers and applications. *(Spring)*

(413) **ELET 3213. Industrial Electronics. (3)** Prerequisite: ELET 3172. Prerequisite or corequisite: ELET 3211. Powerdiodes, bipolar power transistors, thyristors, power MOSFET's and their circuit applications to industrial problems. *(Fall)*

(414) **ELET 3214. Operational Amplifiers with Applications. (3)** Prerequisite: ELET 3211. Ideal OP-AMP analysis, practical OP-AMP considerations, linear OP-AMP circuits, nonlinear OP-AMP circuits, practical applications. *(Spring)*

(422) **ELET 3222. Automatic Controls. (3)** Prerequisite or corequisite: ELET 3212. Automatic control concepts; mathematical models; control system components; transient and frequency response; control system design. *(Spring)*

**ELET 3255. ELET Laboratory III. (1)** Prerequisite or corequisite: ELET 3211 and 3281. Experiments which support concepts and practice covered in ELET 3211 and 3281. Three laboratory hours per week. *(Fall)*

**ELET 3256. ELET Laboratory IV. (1)** Prerequisites or corequisites: ELET 3212 and 3275. Experiments which support concepts and practice covered in ELET 3212 and 3275. Three laboratory hours per week. *(Spring)*

**ELET 3257. ELET Laboratory III. (1)** Prerequisites or corequisites: ELET 3211 and 3213. Experiments which support concepts and practice covered in ELET 3211 and 3213. Three laboratory hours per week. *(Fall)*

**ELET 3258. ELET Laboratory IV. (1)** Prerequisites or corequisites: ELET 3212, 3214, and 3222. Experiments which support concepts and practice covered in ELET 3212, 3214, 3222. Three laboratory hours per week. *(Spring)*

(461) **ELET 3261. Industrial Instrumentation. (3)** Prerequisites: ELET 3112 and 3114. Pneumatic and electrical sensors and transducers used for measuring physical processes, such as temperature, pressure and flow rate; selection criteria; standards and calibration. *(Fall)*

**ELET 3275. Integrated Circuit Applications. (3)** Prerequisites: ELET 3112 and 3183. Study of the external characteristics of digital and analog integrated circuits. Applications of these circuits in digital systems. Design constraints and considerations due to device limitations. Device selection based upon application requirements. *(Fall)*

(481) **ELET 3281. Computer Design. (3)** Prerequisite: ELET 3183. Prerequisite or corequisite: ELET 3285. Organization and design approaches for computer systems. Hardware-software relationships. Microprogramming. Arithmatic algorithms. Input-output design; multiprocessor systems and networks. *(Fall)*

(484) **ELET 3284. Design of Real-Time Systems. (3)** Prerequisite: ELET 3285. Prerequisite or corequisite: ELET 3281. Characteristics and applications of real-time computer systems, especially as applied to process control, monitoring, and data collection; the computer as a part of the total system, programming for real-time applications; reliability and maintainability; effects of downtime. *(On demand)*

(385) **ELET 3285. Assembly-Language Programming. (3)** Prerequisites: ELET 3183 and CSCI 1100. Z-80 machine and assembly language programming. *(Fall)*

(486) **ELET 3286. Microcomputer Applications. (3)** Prerequisite: ELET 3281. Architecture, instruction set, and bus structure of representative microprocessors; assembly language programming; interfacing experiments. Two lecture hours and three laboratory hours per week. *(Spring)*

## INDUSTRIAL ENGINEERING TECHNOLOGY (INET)

(311) **INET 3103. Methods Analysis. (3)** Analysis of work methods; a study of work measurement systems; regression techniques in formula construction; progress curves. *(Fall)*

(411) **INET 3123. Production Control Systems. (3)** Prerequisite: statistics. Principles, analysis and design of production and inventory planning and control systems. Demand forecasting, production scheduling and control systems and introduction to CPM. *(Fall)*

(412) **INET 3133. Quality Control. (3)** Prerequisite: statistics. The theory and application of inspection sampling plans and control charts for the design, specification and control of product quality. *(Spring)*

(351) **INET 3151. Method Analysis Laboratory. (1)** Prerequisite or corequisite: INET 3103. Analysis and design of work methods; principles of motion study; work measurement by direct and predetermined motion-time systems; video tape and motion picture analysis. *(Spring)*

(421) **INET 3203. Plant Layout. (3)** Prerequisite: INET 3103. Designing a plant or office with respect to material handling, machine location, auxiliary services, capital requirements, safety and personnel organization. *(Fall)*

(431) **INET 3223. Engineering Economics. (3)** Principles of evaluating alternative engineering proposals. Economic measures of effectiveness, costs and cost estimation, basic comparative models, breakeven and replacement analysis. *(Fall, Summer)*

(441) **INET 3233. Occupational Safety. (3)** Causes and prevention of industrial accidents. Hazardous processes and material. Design of accident prevention programs. *(Spring)*

(442) **INET 3243. Occupational Health Technology. (3)** Methodology and philosophy of evaluating and monitoring the work environment for human stresses and toxic substances which affect the health of the worker. Topics include gases, vapors, fumes and dust; radioactivity hazards; occupational diseases; thermal stress; illumination and exhaust ventilation. *(On demand)*

(451) **INET 3251. Plant Layout and Materials Handling Laboratory. (1)** Prerequisite or corequisite: INET 3203. Analysis and design of material handling systems; specifications of system components. *(Spring)*

(462) **INET 3263. Human Factors. (3)** Human capabilities and limitations affecting communications and response in man-machine systems. Physiological and psychological fundamentals; anthropometrics. *(On demand)*

(452) **INET 3811. Directed Projects. (1)** Prerequisite: senior standing. A synthesis of prior work using fundamental principles applied in a directed project. Design of production systems and subsystems. *(On demand)*

## MANUFACTURING ENGINEERING TECHNOLOGY (MFET)

**MFET 3111. Manufacturing Processes. (3)** Capabilities, limitations, and operating characteristics of families of machine tools and processes; casting, cutting, forming, joining, fabricating, and inspection machinery, including numerical controls. *(Fall)*

**MFET 3131. Computer Integrated Manufacturing (CIM). (3)** Automated manufacturing systems involving computers to monitor vendor input, process variations, component selection and routing, and test and evaluation of products. Applications involving integration of computer aided design (CAD) systems with computer aided manufacturing (CAM) systems. Real-time reporting of quality and productivity for management. *(Spring)*

**MFET 3181. Digital Process Control. (3)** Prerequisite: MEET 3164. Applications and programming of microprocessors for control of manufacturing processes. Interfaces with sensors, actuators, and computer systems. Includes classroom and laboratory demonstrations. *(Spring)*

**MFET 3251. CIM Laboratory. (2)** Experiments with computer control of processes, including robotics. Measurement of physical variables for monitoring, controlling, and testing production operations. Application of microprocessors and micro computers to system control and status reporting. One class hour, three laboratory hours per week. *(Spring)*

## MECHANICAL ENGINEERING TECHNOLOGY (MEET)

(312) **MEET 3114. Dynamics. (4)** Prerequisites: statics, differential and integral calculus. The dynamic behavior of machine elements; translation and rotation of a rigid body (including a review of topics in kinematics), the principles of conservation of energy and momentum. *(Spring)*

(322) **MEET 3123. Strength of Materials. (3)** Prerequisites: statics, differential and integral calculus. Stress-strain relationships resulting from direct loads, torsional loads and bending loads, and the results obtained from applying more than one of these loads simultaneously. Beam deflection and column loading. *(Fall)*

(331) **MEET 3133. Fluid Mechanics. (3)** Fundamental principles of fluid mechanics. Topics include manometry, buoyancy, forces on submerged bodies. Bernoulli's equation with applications, orifices, pipe losses and an introduction to hydrodynamics. *(Fall)*

(341) **MEET 3143. Thermodynamics. (3)** Prerequisites or corequisites: differential and integral calculus. Fundamentals of thermodynamics including work and heat; classical approach to first and second laws of thermodynamics; ideal gas, entropy, reversibility, irreversibility, and study of various processes and cycles. *(Spring)*

(351) **MEET 3151. Fluid Mechanics Laboratory. (1)** Prerequisite or corequisite: MEET 3133. Flow through conduits and in open channels, the experimental determination of fluid specific weights, viscosity and flash and fire points. Flow measuring devices such as orifices, venturi tubes, anemometers and pitot tubes. Laminar-turbulent flow and stability. *(Spring)*

(352) **MEET 3152. Stress Analysis Laboratory. (1)** Prerequisite or corequisite: MEET 3123. Experiments illustrating stress-strain relationships in engineering materials and the use of brittle coating, photoelasticity and electrical-resistance strain gages. *(Fall)*

(373) **MEET 3164. Instrumentation and Controls. (4)** Introduction to instrumentation for measurement and control of physical variables, with emphasis on electronic systems. Review of basic circuit analysis, electrical instruments, sensors and measurement principles and a survey of automatic controls from a systems point of view. *(Spring)*

(411) **MEET 3213. Machine Design I. (3)** Prerequisite: MEET 3123. Prerequisite or corequisite: MEET 3114. Analysis and design of clutches, brakes, belts and roller chain. Indeterminate normal loading, superposition of stresses and deflections, compound stresses, columns and fatigue. Theories of failure. Shaft design, deflections of shafts with nonuniform moments of inertia involving computer verification. Antifriction bearings, engineering materials, helical compression springs. Small mechanical component and system designs. *(Spring)*

(412) **MEET 3223. Machine Design II. (3)** Prerequisite: MEET 3213. A continuation of MEET 3213 with emphasis on new methods of problem solving and opportunities to integrate previously attained skills and knowledge into the design and optimization of small machine systems. *(On demand)*

(421-422) **MEET 3232 and MEET 3242. Senior Design Project I and II. (2) (2)** Prerequisites: MEET 3143 and 3213. Corequisite or prequisite: MEET 3164 or permission. A two-semester course sequence in which each student conceives, proposes and implements a senior level design project which demonstrates abilities as developed by the course work taken thus far. Each student uses industrial project planning techniques to complete a project proposal and plans and makes substantial progress toward implementation in the first semester and completes the project including design evaluation during the second semester. One class hour and three lab hours per week. *(Fall, Spring)*

(452) **MEET 3251. Instrumentation Laboratory. (1)** Prerequisite or corequisite: MEET 3164. Practice in the use of the various instrumentation devices studied in MEET 3164. *(Fall)*

(453) **MEET 3252. Thermodynamics and Heat Transfer Laboratory. (1)** Prerequisite or corequisite: MEET 3143. Experimentation involving the fundamental principles of thermodynamics and heat transfer, as applied to internal combustion engines, steam engines, engine dynamometers, refrigeration and heat pumps, solar energy systems, and heat exchangers. Three laboratory hours per week. *(Fall)*

(432) **MEET 3263. Fluid Power. (3)** Prerequisite: MEET 3133. Mechanical and fluid power and the conversion of one to the other. Components and system efficiencies including those consisting of cascaded components. Performance evaluation of such hydraulic components as pumps, motors, valves and metering devices. Viscosity, bulk modulus, noise, optimum performance and system design will be considered. *(On demand)*

(441) **MEET 3273. Air Conditioning Systems. (3)** Prerequisite: MEET 3143. Functions and operating characteristics of the major components of refrigerating machines, heat pumps, boilers, furnaces, heat exchangers, solar collectors, fans and pumps. Emphasis on sizing, economics and performance characteristics. Includes coverage of psychometric principles and fan and pump laws. *(Fall)*

(443) **MEET 3283. Modern Techniques in Energy Conservation and Utilization. (3)** Prerequisite: MEET 3143 or consent of the instructor. Survey of current topics that may include solar energy, basic nuclear reactor technology, ammonia-based Rankine cycle, absorption refrigeration cycle, heat pump cycle, techniques for energy conservation in new construction and techniques for retrofitting existing energy utilization systems. *(On demand)*

(481) **MEET 3293. Mechanical, Plumbing and Electrical Systems for Buildings. (3)** Basic theory and practical application of heating, ventilating, air conditioning, plumbing and electrical systems in construction. Study of National Fire and Plumbing Codes. *(Spring)*

# Department of Mechanical Engineering and Engineering Science

*Chairperson:* Professor DeHoff
*Distinguished Professor:* Nicollian
*Professors:* Houghton, Kim, Mohanty, Snyder
*Associate Professors:* Dwivedi, Hari
*Assistant Professors:* Aly, Estrada, Peindl
*Lecturer:* Cope
*Faculty Associate:* Wolny

Mechanical engineering is possibly the broadest of the engineering disciplines. Mechanical engineers are involved in almost all aspects of the technological problems facing today's society. Among the major concerns of the mechanical engineer are problems related to conversion, utilization and conservation of our limited energy resources. Additional important areas for the mechanical engineer include the design and analysis of machines, structures and manufacturing processes related to the industrial output of the nation. Increasingly this design and analysis is computer based. Mechanical engineers develop and utilize the techniques of computer-aided design (CAD/CAM) and incorporate the use of robots in manufacturing processes.

A sound understanding of the engineering sciences is fundamental to the education of engineers in every discipline. The engineering sciences are generally identified as those areas of engineering which emphasize the application of the fundamental principles of the physical sciences, primarily physics and chemistry, to engineering problems. Some classical and emerging engineering areas recognized to fall within this field include thermodynamics, fluid mechanics, engineering mechanics, engineering materials, nuclear and chemical sciences, microelectronics theory and fabrication and the solid state sciences.

The Department of Mechanical Engineering and Engineering Science offers an undergraduate program leading to a Bachelor of Science in Mechanical Engineering (B.S.M.E.) degree and a graduate program leading to a Master of Science in Engineering (M.S.E.) degree. Using the flexibility provided by the technical electives, and with engineering career counseling, a student can develop a variety of educational programs which would provide the background for professional engineering licensing and practice in any of the areas included within mechanical engineering and/or the engineering sciences. The student can also prepare for graduate study in mechanical engineering, materials science or any of the recognized areas covered by the engineering sciences. Individualized study programs in one of the interdisciplinary fields involving the merger of engineering and the various science areas, such as bioengineering, microelectronics or chemical engineering sciences, can be developed.

The program in Mechanical Engineering is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, a specialized accrediting body recognized by the Council on Postsecondary Accreditation.

## BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING (B.S.M.E.)

A major in Mechanical Engineering leading to the B.S.M.E. degree consists of a total of 132 credit hours. These requirements are:

| | |
|---|---|
| English | 9 |
| Humanities and Social Science Electives | 12 |
| Economics | 3 |
| Mathematics | 17 |
| Physics | 11 |
| Chemistry | 4 |
| Science Elective | 3 |
| Freshman Engineering | 1 |
| Engineering Science | 9 |
| Electrical Engineering | 6 |
| Departmental Requirements | 45 |
| Technical Electives | 12 |
| | 132 |

The social science and humanities electives must be chosen to satisfy Goals III, V and VI of University general education requirements and to meet the objectives of a broad education consistent with the educational goals of the profession. This subject area must include some courses at an advanced level.

The science elective must be chosen from the physical, life or earth sciences and must complement the student's overall educational plan to satisfy the college degree requirement.

The mathematics elective may be selected from MATH 2122, 2164, or a 3000-level mathematics course approved by the Department.

The technical electives are chosen in consultation with the academic adviser. The student can use these electives to (1) obtain some breadth within the engineering sciences by choosing additional advanced courses from the various engineering sciences; (2) obtain significant depth within a particular area of mechanical engineering, or engineering science, through the use of available engineering science, mechanical engineering, science, mathematics and other engineering courses; (3) prepare for graduate work in mechanical engineering, engineering science or some other engineering areas. The technical electives must contain at least three hours of course work dealing with engineering science, analysis, synthesis or design with the remaining nine hours being in engineering, science, mathematics, business or architecture.

All mechanical engineering majors must satisfactorily complete the Freshman Engineering course ENGR 1100 during their first semester in attendance in mechanical engineering at UNCC.

## CURRICULUM OUTLINE
## FOR THE MECHANICAL ENGINEERING MAJOR
## LEADING TO THE B.S.M.E. DEGREE

### Freshman Year

| | |
|---|---|
| ENGR 1100 Intro. to Engr | 1 |
| CHEM 1101 Prin. of Chem. I | 3 |
| CHEM 1101L Chem. Lab | 1 |
| MATH 1141 Calculus I | 4 |
| ENGL 1101 English | 3 |
| Humanities/Social Science | 3 |
| | 15 |

| | |
|---|---|
| MEGR 1102 Engr. Graphics | 2 |
| PHYS 2221 Dynamics | 3 |
| PHYS 2221L Experimental Phys. I | 1 |
| MATH 1142 Calculus II | 4 |
| ENGL 1102 English | 3 |
| Science Elective | 3 |
| | 16 |

### Sophomore Year

| | |
|---|---|
| MEGR 2101 Computer Appl | 2 |
| ESGR 2141 Engr. Mech I | 3 |
| EEGR 2161 Basic Elec. Engr. I | 3 |
| MATH 2141 Calculus III | 3 |
| PHYS 2231 Electricity and Magnetism | 3 |
| PHYS 2231L Exper. Phys. II | 1 |
| ENGL 2116 Tech. Comm. | 3 |
| | 18 |

| | |
|---|---|
| EEGR 2162 Elec. Engr. II | 3 |
| ESGR 2142 Engr. Mech. II | 3 |
| MATH 2171 Differential Equ. | 3 |
| MEGR 2154 Lab I | 2 |
| ECON 2101 or 2102 | 3 |
| PHYS 2241 Intro. to Modern Phys. | 3 |
| | 17 |

### Junior Year

| | |
|---|---|
| MEGR 3111 Thermodynamics I | 3 |
| MEGR 3125 Analysis & Synthesis | 3 |
| MEGR 3153 Laboratory II | 2 |
| ESGR 3141 Solid Mechanics | 3 |
| MEGR 3161 Engr. Materials | 3 |
| Math Elective | 3 |
| | 17 |

| | |
|---|---|
| MEGR 3112 Thermodynamics II | 3 |
| MEGR 3126 Analysis & Design | 3 |
| MEGR 3154 Laboratory III | 2 |
| MEGR 3114 Fluid Mechanics | 3 |
| Technical Elective | 3 |
| Humanities/Social Science | 3 |
| | 17 |

### Senior Year

| | |
|---|---|
| MEGR 3299A Prof. Development | 0 |
| MEGR 3221 Mach. Analy. & Dsgn. | 3 |
| MEGR 3253 Senior Design I | 2 |
| MEGR 4111 Heat Transfer | 3 |
| Technical Elective | 3 |
| MEGR 3101 Engr. Economics | 2 |
| Humanities/Social Science | 3 |
| | 16 |

| | |
|---|---|
| MEGR 3214 or MEGR 3222* | 3 |
| MEGR 3299 Prof. Development | 1 |
| MEGR 3254 Senior Design II | 3 |
| Technical Electives | 6 |
| Humanities/Social Science | 3 |
| | 16 |

*Senior-level design course selected to complement the student's overall educational and professional objectives.

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## ENGINEERING SCIENCE (ESGR)

(241) **ESGR 2141. Engineering Mechanics I. (3)** Prerequisite: PHYS 2221. Corequisite: MATH 1142. The first course of a two-semester sequence introducing the principles of particle and rigid body mechanics with engineering applications. Force systems and resultants. The equilibrium of particles and rigid bodies. Friction. Properties of areas and volumes. The inertia tensor. *(Fall, Spring, Summer) (Evenings)*

(242) **ESGR 2142. Engineering Mechanics II. (3)** Prerequisite: ESGR 2141. Corequisite: MATH 1142. The kinematics and kinetics of particles. Work-energy and impulse-momentum principles and conservation laws. Introduction to the dynamics of systems of particles and of rigid bodies. Energy and momentum methods. *(Fall, Spring, Summer) (Evenings)*

(243) **ESGR 2143. Statics and Strength of Materials. (3)** Prerequisite: PHYS 2221. Corequisite: MATH 1142. Force systems, resultants and equilibrium of particles and rigid bodies. Introduction to the engineering theory of deformable solids with applications. *(Fall, Spring, Summer) (Evenings)*

(490) **ESGR 3090. Special Topics in Engineering Science, Mechanics and Materials. (1-4)** Prerequisite: consent of the Department. The course builds upon and synthesizes knowledge gained from the engineering science, mathematics and physical science stem of the core curriculum. Specific topics teach engineering analysis, synthesis and design and provide an opportunity for students to investigate an area of specialization. May be repeated for credit. *(On demand)*

(331) **ESGR 3131. Introduction to Electronic Materials. (3)** Prerequisite: PHYS 2231. Electronic materials and devices with examples from crystalline and amorphous semiconductors, junction and MOS devices, thermoelectrics, lasers and superconductors. Introduction to the quantum mechanics of electrons in solids, electron-atom interactions and energy band model, providing a basis for rationalizing a wide variety of electronic properties. *(Fall)*

(341) **ESGR 3141. Introduction to Solid Mechanics. (3)** Prerequisites: ESGR 2141 and MATH 2141. Engineering theory of deformable solids and applications. Stress and deformation resulting from axial, torsion, and bending loads. Shear and moment diagrams, Mohr's circle for stress and strain, and buckling of columns. *(Fall, Spring, Summer) (Evenings)*

(492) **ESGR 3890. Individualized Study. (1-3)** Prerequisite: consent of the Department. Supervised individual study with an area of particular interest to a student which is beyond the scope of the courses. May be repeated for credit. *(On demand)*

(491) **ESGR 3990. Undergraduate Research. (1-4)** Prerequisite: consent of the Department. Independent study of a theoretical and/or experimental problem in a specialized area of engineering science, mechanics and materials. Students pursue an area or problem in more depth than possible in other courses. Topics for investigation may originate from the student or the faculty member supervising the study. May be repeated for credit. *(On demand)*

**Courses for Advanced Undergraduates and Graduate Students**

(461) **ESGR 4131. Solid State Transformations. (3) (3G)** Prerequisite: MEGR 3161. Thermodynamics, morphology and kinetics of solid state transformations. Diffusion and absolute reaction rate theory; crystallographic nature of phase transformations; nucleation and growth processes; precipitation and oxidation reactions. *(Alternate years)*

(434) **ESGR 4134. Solid State Electronics. (3) (3G)** Prerequisite: EEGR 3121 or ESGR 3131 or PHYS 2241 or consent of instructor. Electron theories of solids. Quantum mechanical foundations. Free electron and band models. Electron transport processes in metallic and nonmetallic conduction; diffusion and drift phenomena. Theory of semiconductors. *(Spring)*

(562) **ESGR 4162. Materials Production and Process. (3) (3G)** Prerequisites: MEGR 3161 and consent of instructor. Applications of thermodynamics and chemistry to extractive process metallurgy. Fundamental principles of materials forming operations. Casting, mechanical working and joining methods. *(Alternate years)*

(465) **ESGR 4165. Introduction to Nondestructive Evaluation Methods. (3) (3G)** Prerequisite: MEGR 3161. Nondestructive evaluation principles and techniques, including liquid penetrants, magnetic particle, acoustic emission, ultrasound, radiography and eddy currents. *(Alternate years)*

(102) **MEGR 1102. Mechanical Engineering Graphics. (2)** An introduction to engineering drawing. Topics include lettering, sketching, projection systems and auxiliary views. The use of CAD software is discussed. *(Spring) (Evenings)*

(201) **MEGR 2101. Introduction to Computer Applications. (2)** Prerequisite: MATH 1141. Computer programming with emphasis on FORTRAN 77. Use of mainframe, mini and micro computing systems for the solution of engineering problems. *(Fall)*

(253) **MEGR 2154. Laboratory I. (2)** Prerequisites: ENGL 2116 and PHYS 2231L. Use of laboratory equipment and application of the principles of experimentation and measurement. One hour of lecture and three laboratory hours per week. *(Fall, Spring) (Evenings)*

(490) **MEGR 3090. Special Topics in Mechanical Engineering. (1-4)** Prerequisite: consent of the Department. The course will build upon and synthesize the knowledge the students have gained from the mechanical engineering core curriculum. The specific topics covered in each separate offering of the course will serve as the vehicle for teaching engineering analysis, synthesis and design, while simultaneously affording an opportunity for the students to point themselves toward an area of specialization. May be repeated for credit. *(On demand)*

**MEGR 3101. Engineering Economics. (2)** Prerequisite: senior standing. Basic concepts of engineering economics including equivalent annual costs, present worth, internal rates of return, benefit/cost ratios. Economic analysis of engineering systems. Optimization techniques for resource allocation. *(Fall)*

(311) **MEGR 3111. Thermodynamics I. (3)** Prerequisite: ESGR 2142 or PHYS 2221 and MATH 2171. First and second laws of thermodynamics. Work and heat carnot cycle. Ideal and real gases. Nonreactive mixture of gases. Availability and irreversibility. *(Fall, Spring, Summer) (Evenings)*

(312) **MEGR 3112. Thermodynamics II. (3)** Prerequisite: MEGR 3111. General thermodynamic relations; equations of state and generalized charts. Combustion, dissociation and chemical equilibrium. Introduction to power cycles. *(Spring)*

(342) **MEGR 3114. Introduction to Fluid Mechanics. (3)** Prerequisites: ESGR 2142 and MATH 2141. Basic concepts of a fluid and the fundamentals of ideal and real fluid flow. Topics include fluid statics, conservation principles, Bernoulli's equation, fluid flow in pipes, and measurement devices. *(Fall, Spring, Summer) (Evenings)*

(323) **MEGR 3125. Analysis and Synthesis of Mechanisms. (3)** Prerequisite: ESGR 2142. Kinematic elements, mechanisms and machines. Analysis of the motion of linkages, cams and gears. Kinematic design of cams, gears and gear-trains. Synthesis of plane linkages. Computer-aided design of kinematic systems. *(Fall, Spring)*

**MEGR 3126. Analysis and Design of Mechanical Systems. (3)** Prerequisites: MEGR 3125 and MATH 2171. Modeling of mechanical dynamic systems. Analysis and design of mechanical systems using time domain and frequency domain methods. Use of computer simulations in the design of mechanical systems. *(Spring, Summer)*

(353) **MEGR 3153. Laboratory II. (2)** Prerequisite: MEGR 2154. Corequisites: MEGR 3111, ESGR 3141 and MEGR 3161. Laboratory experiments and development of basic experimental techniques and instrumentation necessary for measurements in the areas of engineering science, mechanics and materials. One hour of lecture and three laboratory hours per week. *(Fall, Spring) (Evenings)*

(354) **MEGR 3154. Laboratory III. (2)** Prerequisite: MEGR 3153. Corequisite: MEGR 3114. Continuation of MEGR 3153. One hour of lecture and three laboratory hours per week. *(Spring, Summer) (Evenings)*

(361) **MEGR 3161. Introduction to Engineering Materials. (3)** Prerequisites: CHEM 1101 and MATH 2171. Classifications of engineering materials. Introduction to property structure relationships. Ideal and defect atomic structures of solids with examples from metals, ceramics and polymers. Cold working and annealing effects. Phase equilibria in alloys; introduction to diffusional processes and transformation kinetics. *(Fall)*

(362) **MEGR 3162. Mechanical Behavior and Strengthening of Solids. (3)** Prerequisite: MEGR 3161. Prerequisite or corequisite: ESGR 3141. Mechanical properties of materials including elastic behavior, plastic flow, fracture, creep, fatigue, elevated temperature effects. Correlation of properties with atomic and microscopic structure. Dislocation theory and its application to mechanical behavior and strengthening mechanisms. Alloy hardening effects; effects of processing and heat treatments. Applications in Fe-C alloys. *(Spring)*

(409) **MEGR 3210. Automotive Power Plants. (3)** Prerequisite: MEGR 3112. Energy analysis of internal and external combustion engines for vehicular propulsion. Thermodynamic principles for combustion efficient use of fuel combustion, different types of fuel use, and pollutant control. *(Alternate years)*

(414) **MEGR 3214. Refrigeration and Air Conditioning. (3)** Prerequisites: MEGR 3112 and 4111. Thermodynamics and heat transfer applied to analysis, design of cooling/heating systems. *(Spring)*

**MEGR 3221. Machine Analysis and Design I. (3)** Prerequisite: MEGR 3126. Technical application of basic principles of mechanical science to analysis of machines and mechanical systems. Methods of design of typical machine elements. Strength and deflection requirements. *(Fall)*

**MEGR 3222. Machine Analysis and Design II. (3)** Prerequisite: MEGR 3221. Synthesis of machines and mechanical systems. Analysis, creative design and selection of machines and machine elements. *(Spring)*

(453) **MEGR 3253. Senior Design I. (2)** Prerequisite: MEGR 3154. Corequisite: senior standing in Engineering. First of a two-semester sequence leading to a major integrative experience in applying mathematics, basic science and engineering science to the practice of engineering. *(Fall)*

(454) **MEGR 3254. Senior Design II. (3)** Prerequisite: MEGR 3253. A continuation of MEGR 3253 including project execution leading to an oral presentation and final written report. *(Spring)*

(499) **MEGR 3299. Professional Development. (1)** An examination of various aspects of engineering as a profession. The course will be graded on a *Pass/No Credit* basis. *(Fall, Spring)*

(492) **MEGR 3890. Individualized Study. (1-3)** Prerequisite: consent of the Department. Supervised individual study within an area of a student's particular interest which is beyond the scope of existing courses. May be repeated for credit. *(On demand)*

(491) **MEGR 3990. Undergraduate Research. (1-4)** Prerequisite: consent of the Department. Independent study of a theoretical and/or experimental problem in a specialized area of mechanical engineering. Topics originate from the student or the faculty member supervising the study. May be repeated for credit. *(On demand)*

**Courses for Advanced Undergraduates and Graduate Students**

(411) **MEGR 4111. Heat Transfer. (3) (3G)** Prerequisites: MEGR 3112 and 3114. Steady and unsteady state heat conduction, forced and natural heat convection principles, radiative heat transfer, heat exchangers. *(Fall)*

(442) **MEGR 4112. Intermediate Fluid Mechanics. (3) (3G)** Prerequisites: MEGR 3111 and 3114. A continuation of MEGR 3114. Topics include boundary layers, flow over body surfaces, compressible flow, turbomachinery and propulsion devices. *(Alternate years)*

(412) **MEGR 4113. Energy Conversion I. (3) (3G)** Prerequisites: MEGR 3112 and 3114. Corequisite: MEGR 4111. Application of principles of thermodynamics, fluid flow and heat transfer to internal combustion engines, compressors, turbines, heat exchangers, refrigeration, cryogenics. *(Fall)*

(415) **MEGR 4143. Mechanical Vibrating Systems. (3) (3G)** Prerequisites: ESGR 2142 and 3141 or permission of the Department. Free and forced vibrations of systems with multi-degrees of freedom. Transient vibrations, analog simulation, non-linear vibrations and the vibration of continuous systems. *(Fall)*

(444) **MEGR 4144. Intermediate Dynamics. (3) (3G)** Prerequisites: ESGR 2142 and MATH 2171. Further studies in dynamics of particles and rigid bodies, with engineering applications. Introduction to Lagrange's equations of motion. Multi-degree-of-freedom vibrations. *(Alternate years)*

5000-LEVEL COURSES ARE FIRST-YEAR GRADUATE COURSES ALTHOUGH SOME ADVANCED SENIORS MAY ENROLL WITH PERMISSION. SEE PAGES 393-395 FOR COMPLETE COURSE DESCRIPTIONS.

# College of Nursing

*Dean:* Professor Langston
*Dean Emeritus:* Edith Brocker
*A. Sue Kerley Professor of Nursing:* Caddell
*Professor Emeritus:* Vera Smith
*Professors:* Jernigan, Nicholson, Schlachter
*Associate Professors:* Andrews, Boggs, Chase, Clinton, Fray, Head, Mauldin, Mayo
*Assistant Professors:* Coleman, Curran, Dulski, Edwards, Gray, Herbert, King, L. Moore, M. Moore, Newman, Ruth, Sanders, M. Smith

**Purpose.** The aim of the College of Nursing is to prepare the nurse for beginning or advanced practice of nursing; to pursue systematic investigation of phenomena within the discipline of nursing; to engage in critical thinking; and to become a productive member of society.

**Programs.** Degrees awarded through the College of Nursing are the Bachelor of Science in Nursing (B.S.N.) and the Master of Science in Nursing (M.S.N.). Programs are accredited by the National League for Nursing and approved by the State Board of Nursing of North Carolina. See pages 412-415 for information regarding the M.S.N. degree.

**Philosophy.** The philosophy of the College of Nursing is derived from, built upon, and is consistent with the philosophy of The University.

The faculty believe that human life has intrinsic worth both as an individual and as a collective experience. The holistic nature of each human being involves complex adaptive and developmental processes, is dynamic, continuous and requires nurturing, socialization and interdependence.

> Health is a dynamic state of being in which the developmental behavior potential of an individual is realized to the fullest extent possible. Each human being possesses various strengths and limitations resulting from interaction of environmental and hereditary factors. The relative dominance of the strengths and limitations determines an individual's place on the health continuum; it determines the person's biological and behavioral integrity, his wholeness. (NURSING - A SOCIAL POLICY STATEMENT, ANA, p.5)

Nursing shares with other disciplines the goal of promoting a positive state of health for society and for each individual within the society. Nursing is the diagnosis and treatment of human responses to actual or potential health problems. As such, the faculty believe that nursing is a human service which is extended on the basis of need rather than privilege. The process of nursing is deliberative, interactive, and scientifically based. The nurse-client relationship is a collaborative one guided by recognition of mutual responsibility and human dignity.

The faculty believe that the minimum preparation for the professional practice of nursing is a baccalaureate education which is built upon a base drawn from the scientific and humanistic disciplines, and emphasizes nursing theory. The University provides opportunity for each student to develop knowledge of self, understanding of the nature of humanity, and competencies relevant to individual and professional goals. The College of Nursing supports the assumption by individual faculty of responsibility for implementing an appropriate service, consultative, or investigative role within the health care system.

The faculty facilitates learning by creating an environment conducive to intellectual inquiry and freedom of expression. Clearly defined and flexible learning goals promote active self-directed participation by students in the educative process. Faculty believe that a major element of the student learning experience is clinical practice within the health care system.

**Objectives.** The curriculum leading to a Bachelor of Science in Nursing degree is designed to prepare a professional nurse who will demonstrate the ability to:

1. Synthesize knowledge of biological and behavioral sciences and the humanities to the professional practice of nursing.
2. Incorporate life cycle perspectives into nursing practice.
3. Utilize nursing theory and process in promoting, maintaining and restoring optimal health of individuals, families and groups.
4. Implement appropriate nursing roles in supporting the health of individuals, families and groups in a variety of settings.
5. Incorporate knowledge of interpersonal theories to promote therapeutic and collegial relationships in achieving health care goals.
6. Evaluate personal and professional growth.
7. Assume leadership responsibility for evaluating nursing processes and outcomes and by implementing change.
8. Contribute to the quality of nursing practice through critiquing, participating in and utilizing research process.
9. Advance personal knowledge through graduate or continuing professional education.

**Study Abroad.** The College of Nursing offers a three-credit course in England. The student has the opportunity to study the health care system of Great Britain as well as the educational process for nurses in England. The study time abroad is three weeks in the early summer months.

## BACHELOR OF SCIENCE IN NURSING: GENERAL POLICIES

The Bachelor of Science in Nursing degree (B.S.N.) comprises 120 semester hours. Fifty-eight of these hours are in the nursing major. The general education and prerequisite foundation courses comprise 53 semester hours credit. The student selects nine additional hours of electives from general education or nursing. The program may be completed in four academic years or eight semesters and one summer of full-time study.

Nursing and general education courses are arranged so that there is a continual interchange of theory and practice. The curriculum of the College of Nursing proceeds in a series of planned sequential learning experiences that involve the student in the teaching-learning process and permit development of the intellectual processes of inquiry, analysis, synthesis and creativity.

**Immunization and Status of Health.** Prior to participation in clinical experiences, all student must submit evidence of a physical examination, an acceptable rubella titer or immunization, and a tine test.

**Challenge Examinations.** Challenge examinations in nursing courses are open to any student who is currently enrolled in the College of Nursing and who has had previous formal instruction in the subject area content for which he/she wishes to challenge for credit. Equivalency credit for nursing courses will be determined on the basis of written validation examinations in each clinical nursing course, and the applicant will be given credit only for those courses in which he/she attains a grade of *C* or better on the challenge examination. No challenge examination may be repeated. If any attempt at challenge is unsuccessful, the student will be required to enroll in the course for both theory and clinical laboratory experience.

**Requirements for Progression in the Nursing Program.** In order to promote the progression of safe practitioners from one level to the next within the College of Nursing and eventually into the nursing profession, students:

1. Are required to have an overall GPA of at least 2.5 and to complete SOCY 1101 and 2132; PSYC 1101 and 3151; BIOL 1110, 1259 and 1273; and CHEM 1103 and 1104 in order to enroll in all required junior-level nursing courses except NURS 3102.
2. May have a maximum of four semester hours of *D* credit in general education requirements and required prerequisites for the nursing major.
3. Are required to achieve a grade of *C* or better in all required natural science courses.
4. Must achieve a grade of *C* or better in each nursing course including the clinical components of the course.
5. Are permitted to repeat a nursing course once and only two nursing courses may be failed during the student's matriculation in the nursing major. Taking a challenge examination constitutes one attempt at the course. A student who repeats a nursing course and does not achieve at least a *C* is ineligible to continue enrollment in the College of Nursing.

6. Are required to complete all junior-level nursing courses and achieve a GPA of at least 2.0 overall and in the nursing major in order to enroll in senior-level nursing courses.
7. Must achieve at least a 2.0 GPA in the nursing major to graduate.

## BACHELOR OF SCIENCE IN NURSING/GENERIC PROGRAM

Admissions criteria for entering the B.S.N. Generic Program are given on pages 43 and 44 in the chapter "Admission to The University." A curriculum outline is presented on page 318.

## B.S.N. PATHWAY OPTION FOR REGISTERED NURSES

The Pathway Option is an upper-division program for registered nurses leading to a B.S.N. degree. To be eligible for admission, applicants must have:

1. current licensure as a registered nurse in the state where student clinical experience will be taken;
2. completed UNCC's general education requirements and related behavioral and natural sciences required of nursing students;
3. an overall 2.5 grade point average;
4. practice liability insurance (included in tuition and fees) to cover student clinical experience;
5. a minimum grade of *C* in required natural science courses;
6. a letter of recommendation from employer;
7. at least one year of work experience occuring within five years prior to enrollment; and
8. completed NURS 1100 or equivalent course in human development throughout the life span.

**Course Requirements.** The curriculum is designed to build upon the registered nurse's experience, knowledge, needs and goals. Although the overall goals of the curriculum are the same as the Generic Program, the process of attainment of these goals is different. The curriculum is developed around three major areas: the process of scientific inquiry, the nursing process, the health continuum and nursing roles.

The nursing content of the curriculum can be completed in one calendar year. It consists of four seven-week modules including clinical nursing and two research seminars. Upon successful completion of a comprehensive post-test at the end of the first semester, 24 hours of nursing credit may be awarded.

**Curriculum Requirements**

| | | | | *Semester Hours* |
|---|---|---|---|---|
| 1. | All prerequisite and UNCC general education courses equivalent to the freshman and sophomore years of the Generic Program. | | | 59-67 |
| 2. | Electives (undesignated) | | | 7 |
| 3. | Nursing | NURS 3220 | 6 credits | |
| | | NURS 3230 | 7 credits | |
| | | NURS 3240 | 7 credits | |
| | | NURS 3250 | 6 credits | |
| | | NURS 3191 | 2 credits | |
| | | NURS 3992 | 2 credits | |
| | | Credit by exam | 24 credits | 54 |
| | | | | 120-128 |

## CURRICULUM REQUIREMENTS FOR THE BACHELOR OF SCIENCE IN NURSING GENERIC PROGRAM

### Freshman Year

| | | | |
|---|---|---|---|
| English 1101 (GOAL I) | 3 | English 1102 (GOAL I) | 3 |
| Mathematics 1101 (GOAL II) | 3 | Mathematics 1222* (GOAL II) | 3 |
| Psychology 1101* (GOAL VI: C) | 3 | Biology 1110 | 4 |
| Chemistry 1103* (GOAL IV) | 4 | Chemistry 1104* (GOAL IV) | 4 |
| Foreign Language** (GOAL I) | 4 | Foreign Language** (GOAL I) | 4 |
| | 13 or 17 | | 14 or 18 |

### Sophomore Year

| | | | |
|---|---|---|---|
| Biology 1259* | 4 | Biology 1273* | 4 |
| Psychology 3151* | 3 | Sociology 2132* (GOAL VI: C) | 3 |
| Sociology 1101* (GOAL III) | 3 | NURS 1100* (***) | 3 |
| Elective (GOAL V: A) | 3 | Elective (GOAL V: L) | 3 |
| Elective (GOAL I: W) | 3 | Elective (GOAL VI: X) | 3 |
| | 16 | | 16 |

Summer: NURS 3102 ..... 3

### Junior Year

| Level I | | Level II | |
|---|---|---|---|
| NURS 3105 | 6 | NURS 3106 | 8 |
| NURS 3107 | 2 | NURS 3108 | 2 |
| NURS 3109 | 2 | NURS 3110 | 2 |
| NURS 3111 | 3 | NURS 3112 | 3 |
| | 13 | | 15 |

### Senior Year

| Level III | | Level IV | |
|---|---|---|---|
| NURS 3205 | 6 | NURS 3206 | 6 |
| NURS 3207 | 2 | NURS 3208 | 3 |
| NURS 3209 | 2 | NURS 3210 | 2 |
| NURS 3211 | 3 | NURS 3212 | 3 |
| Elective | 3 | | |
| | 16 | | 14 |

*Prerequisite to Nursing.

**Students may need to complete one or both of these courses based upon results of foreign language proficiency testing. Completion of these courses would require additional credit hours beyond the 120 hours.

***Human Development Throughout the Life Span—any comparable course will meet this requirement.

**GENERAL EDUCATION COURSES TO ACHIEVE THE GOALS OF UNCC EDUCATION:** The General Education program is designed to develop understandings, skills and capacities in six interrelated major areas: I. COMMUNICATION; II. PROBLEM SOLVING; III. UNDERSTANDING VALUES; IV. UNDERSTANDING SCIENCE AND TECHNOLOGY; V. UNDERSTANDING THE ARTS, LITERATURE AND IDEAS; VI. UNDERSTANDING THE INDIVIDUAL, SOCIETY AND CULTURE. Requirements of this program apply to all candidates for baccalaureate degrees who enter UNCC as (1) freshman students (all entering students with fewer than 24 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1986; (2) transfer students (with more than 23 semester credits of prior academic work accepted toward a UNCC degree) after spring semester 1988 (exceptions include new transfer students admitted to B.E.T. programs and the Criminal Justice General Concentration); (3) readmitted students after spring semester 1988 if they have been away from The University for 12 months or longer. Other students must meet the requirements of this program or the requirements specified for their degree at the time they entered The University. See pages 73-77 for complete information regarding GOALS OF UNCC EDUCATION.

## COURSE DESCRIPTIONS

### NURSING (NURS)

**(Curriculum Implemented Fall 1980)**

**Courses for Undergraduates**

(102) **NURS 1100. Growth and Development. (3)** Relationship of selected environmental and social factors to human growth and development and the meaning of health and illness to the individual, the family and the community. Health problems and facilities society provides for meeting health needs and solving health problems. Growth and development throughout the life cycle. *(Fall, Spring)*

(205) **NURS 2100. Nutrition in Health and Disease. (3)** Prerequisites: two semesters of biology and two semesters of chemistry or permission of the instructor. Ways the body handles food from birth through the life cycle to obtain and utilize nutrients for the metabolic needs of health maintenance, growth and added stresses of pregnancy and disease. Focus on normal nutrition. Social and psychological gatekeepers of good nutrition that include childhood eating habits, fads, cultural values, food processing and merchandising methods.

(350) **NURS 3100. Clinical Pathophysiology. (3)** Prerequisites: CHEM 1103, 1104 (or equivalent); BIOL 1259 and 1273 (or equivalent). Internal and external factors which cause loss of system integrity, building on the concepts of stress, adaptation, maladaptation and compensation. Study and application of adaptive mechanisms which serve to maintain relative system integrity within the individual. Alterations in regulatory mechanisms which manifest themselves as pathophysiologic processes and constitute major health problems.

**NURS 3102. Introduction to Clinical Skills. (3)** Prerequisites: permission of the College and completion of all courses required for entrance into nursing at the junior level. Examination of the principles underlying clinical nursing skills as related to the nursing process with emphasis on attaining competence in performing selected skills as a foundation for the theoretical and clinical content of the nursing major. All practice experience will be in the nursing laboratory. *(Summer)*

(305) **NURS 3105. Nursing Process I. (6)** Prerequisites: NURS 3102 and all courses prerequisite to the junior year. An introductory course for the nursing major. Nursing process methodology is the first priority in learning nursing practice. The scientific base for nursing practice studied using a systematic approach. Each step provides the foundation for the methods and concepts which follow. Ambulatory care settings are used for clinical practice, focusing on health assessment of individuals of all ages. *(Fall)*

(306) **NURS 3106. Nursing Process II. (8)** Prerequisites: NURS 3105, 3107, 3109 and 3111. Concepts introduced in Level I are reinforced. Knowledge, skills and competencies necessary to implement the nursing process are synthesized to culminate in therapeutic nursing behaviors, while caring for clients of all ages in altered states of health. In-patient settings are used for clinical practice. *(Spring)*

(307) **NURS 3107. Nursing Roles I. (2)** Prerequisites: NURS 3102 and all courses required for entrance into nursing at the junior level. Introduction to the unique roles and functions of professional nursing including professional roles, research process and legal-ethical aspects. Exploration of the historical influences on the development of the present health care system. *(Fall)*

(308) **NURS 3108. Nursing Roles II. (2)** Prerequisite: NURS 3107. Implementation of the unique roles and functions of professional nursing within the health care system. Use of collaboration, consultation and coordination when interacting with members of the health care team. Theories of management, change and teaching-learning are introduced. The health care and its relationship to illness is explored. *(Spring)*

(309) **NURS 3109. Communication Process I. (2)** Prerequisites: NURS 3102 and all courses required for entrance into nursing at the junior level. Communication patterns and factors which influence sending and receiving messages. Role plays, simulation games, videotape critiques and values clarification exercises. Introduction to communication and group theories necessary for therapeutic relationships. *(Fall)*

(310) **NURS 3110. Communication Process II. (2)** Prerequisite: NURS 3109. Skills for assessing mental health status of clients in general nursing practice. Building on theoretical concepts from sociology and psychology, emphasis is placed on internal and external factors that may influence the client's ability to adapt to changing health status. Use of the nurse-client relationship and crisis theory in intervention. *(Spring)*

(311) **NURS 3111. Adaptive Process I. (3)** Prerequisites: NURS 3102 and all courses required for entrance into nursing at the junior level. Foundation for studying the concept of health. Focus on the individual as a holistic, open system, interdependent upon others in the social system. Normal adaptive processes in relation to predictive, maturational crises. Assessment of individual health status, health behavior, and internal and external influences on health throughout the life cycle. Each student selects a family to follow throughout the nursing major. *(Fall)*

(312) **NURS 3112. Adaptive Process II. (3)** Prerequisites: NURS 3105, 3111. Problems related to situational crises of all ages. Basic pathophysiology and effects of altered health states on the individual and family. *(Spring)*

(405) **NURS 3205. Nursing Process III. (6)** Prerequisites: all junior-level required nursing courses. Concepts introduced in Levels I and II are reinforced and expanded. Implemention of nursing process with individuals, families and communities experiencing multiple, complex health problems. Acute, long term and other community settings are used for clinical practice. *(Fall)*

(406) **NURS 3206. Nursing Process IV. (6)** Prerequisites: NURS 3205, 3207, 3209 and 3211. Concepts introduced in Levels I, II and III are reinforced and expanded. Synthesizes previously acquired knowledge in selected practice settings. *(Spring)*

(407) **NURS 3207. Nursing Roles III. (2)** Prerequisites: all junior-level required nursing courses. Management theory and teaching-learning theory in client-care situations. Analysis of the characteristics of the health care system in relation to the health status of clients. The student develops a nursing research proposal. *(Fall)*

(408) **NURS 3208. Nursing Roles IV. (3)** Prerequisite: NURS 3207. Role theory, sociopolitical process, research and current trends and issues in nursing. Incorporation of knowledge of the sociopolitical processes into professional behavior. Students critique nursing research. *(Spring)*

(409) **NURS 3209. Communication Process III. (2)** Prerequisites: all junior-level required nursing courses. Continuation of Communication Process II. Utilizes nurse-client relationship in intervening with clients who have problematic behavior patterns. Mental health disorders and individual, group and family therapies. *(Fall)*

(410) **NURS 3210. Communication Process IV. (2)** Prerequisite: NURS 3209. Use of communication skills in a variety of health care situations. Communication skills for the nurse in the leadership position, both in the nursing profession and as a member of the community. *(Spring)*

(411) **NURS 3211. Adaptive Process III. (3)** Prerequisites: all junior-level required nursing courses. Study of adaptive processes is extended to include multiple, complex problems related to situational crises affecting clients of all ages. Pathophysiology and effects of altered states of health on individuals, families, the community and the health care system. *(Fall)*

(412) **NURS 3212. Adaptive Process IV. (3)** Prerequisites: NURS 3205, 3211. Concepts related to health are expanded to include changing social needs, values, health problems and issues. Synthesis of knowledge of adaptive processes through nursing management of clients at varying points on the health-illness continuum. Each student will evaluate his/her impact on the health status of the family followed since Level I. *(Spring)*

## COURSE DESCRIPTIONS

## PATHWAYS OPTION FOR REGISTERED NURSES

(491) **NURS 3191. Research in Nursing I. (2)** Prerequisites: completion of all required Level III courses. Introduction to research in nursing and related areas and development of a preliminary proposal. *(Fall)*

(320) **NURS 3220. Trends and Issues in Nursing Practice. (6)** Prerequisites: completion of required general degree courses and related social and physical sciences and permission of the College of Nursing. Corequisite or prerequisite: NURS 1110. Examines those historical, demographic, social and educational changes influencing the professional status of nursing; analysis of nursing roles including the legal, ethical and theoretical perspectives of these roles. Skills necessary to implement the nursing process are learned through seminar, clinical practice and self-directed study. *(Fall)*

(330) **NURS 3230. Nursing Process—Health Assessment. (7)** Prerequisite: satisfactory completion of NURS 3220. Health and factors that influence health. Nursing assessment skills including physical and psychosocial assessment are utilized to determine the health status of selected individuals. Students define specific learning objectives, select the setting for clinical application and negotiate with a preceptor and the instructors for a learning contract. *(Fall)*

(420) **NURS 3240. Nursing Process in Family and Community Health Settings. (7)** Prerequisite: NURS 3230. Knowledge of crisis intervention, community health theory, health care systems and client nursing regimens. Independent study, seminars and clinical practice in the community. *(Spring)*

(430) **NURS 3250. Leadership Roles in Nursing. (6)** Prerequisite: NURS 3240. Skills in critical thinking to evaluate organizations and systems and their influence on nursing practice. Application of scientific problem solving method and change theory when appropriate leadership styles are identified and assessed. The concept of learning as a lifelong process is reinforced. Seminars, independent study and clinical practice. *(Spring)*

(492) **NURS 3992. Research in Nursing II. (2)** Prerequisite: NURS 3191. Study of a nursing problem using the research method. *(Spring)*

**Courses for Advanced Undergraduates and Graduate Students**

(490) **NURS 4090. Topics in Nursing. (3) (3G)** Prerequisite: permission of the instructor. Topics to be chosen from the specialties of nursing, including both clinical and theoretical foci.

# Special Programs

## CHARLOTTE AREA EDUCATIONAL CONSORTIUM

Full-time undergraduate students may enroll in courses *not offered at UNCC* which are offered at other participating institutions in the Charlotte Area Educational Consortium without paying additional tuition and fees. The courses appear on the student's UNCC transcript and are computed in his/her grade point average. Members of the consortium are: Barber-Scotia College, Belmont Abbey College, Central Piedmont Community College, Davidson College, Gaston College, Johnson C. Smith University, Queens College, Sacred Heart College, UNCC, Wingate College, Winthrop College, and York Technical College. (See page 66 of this *Catalog* for registration procedures.)

## COOPERATIVE EDUCATION AND EXPERIENTIAL LEARNING PROGRAMS

Opportunities are available for both undergraduate and graduate students to receive course and/or degree credit for faculty supervised experiences in public and private agencies within the community. These opportunities are offered through various types of experiential learning programs including clinicals, cooperative education, internships, practica and service-learning internships. Course descriptions pertaining to these programs are included in the courses of study of the offering department or college.

**Cooperative Education.** Cooperative Education is a year-round study-work plan of education in which students alternate periods of attendance at The University with periods of employment in jobs related to their major interest. This type of program has been used successfully for many years by colleges and universities throughout the United States. The program is designed to provide practical experience under conditions that The University cannot duplicate.

The work assignments are usually for a 40-hour week for a semester and are paid by the employer at a rate appropriate to the student's development. Some students find that they can meet most or all of their college costs with income from their Co-op assignments. The work assignments are monitored by both the employer and a faculty adviser to assure that they relate to and progress as the student's education progresses. Students usually stay with the same employer but this is not necessary. Many students find the Co-op experience an aid in obtaining their first job—very often with the company or agency with which they had a Co-op assignment. Academic credit may or may not be granted for Co-op work. While working, the Co-op student is enrolled in The University, considered a full-time student, and eligible for student activities.

The Cooperative Education Office works with the faculty of the participating colleges to administer the program. Academic requirements and supervision are provided by the student's college and these vary with the college. The Co-op office works with employers and approved Co-op students to find suitable work opportunities. Co-op students are required to have better grade averages than The University requires for all students. For further information, inquiries can be made of the various colleges or the Experiential Learning/University Cooperative Education Office.

**Internships.** Students may receive academic credit for semester-long, supervised work experiences in public or private community organizations. The amount of credit is determined by the nature of the internship assignment and the number of hours worked each week.

**Practica.** Psychology majors have opportunities to receive academic credit for working in practical settings related to psychology. Each practicum is conducted under the supervision of a faculty member and an agency representative.

**Service-Learning Internships.** Students may participate in internship experiences designed specifically to serve the needs of the community while providing learning opportunities for students. The *Internship Program in Community Education and Services* is designed as an area-wide program with academic credit. The overall objectives of the service-learning program are:

— To identify relationships between the student's academic program and the problems and prospects of modern urban communities.

— To enable students to become involved in solving problems of the urban community.

— To provide manpower for governmental and service agencies in local metropolitan communities.

— To encourage youth to consider careers and/or citizen leadership in urban administration and service.

— To establish a closer relationship between institutions of higher education and the Charlotte area communities by making the resources of The University more accessible to the community and by providing a basis for keeping curriculum, teaching and research relevant to the needs of the community and society.

Interns may receive from one to 15 semester hours credit, with grading on a *Pass/No Credit* basis, for successful completion of ARSC 3400 (Non-Residential Studies). For additional information about this opportunity, contact the Office of the Dean of Arts and Sciences. Also, see Arts and Sciences course descriptions for ARSC 3400.

## ENGLISH LANGUAGE TRAINING INSTITUTE

The English Language Training Institute (ELTI) provides intensive English instruction for international students planning to attend American universities or colleges and for individuals pursuing professional training in the United States. ELTI holds four sessions per year—fall, winter, spring and summer—and offers four language proficiency levels: Basic, Intermediate, Advanced, and Academic Preparation. Class size is limited to 15 students, and students attend classes 20 hours per week. Exceptional students in the Academic Preparation level may take one course which carries up to three academic credits in The University.

ELTI also offers the Summer Institute for International Teachers of English. This program provides international teachers with intensive training in English as a Second Language methodology. In addition to course work, the Summer Institute emphasizes orientation to American culture through social events, trips, and other activities.

For more information about the English Language Training Institute or the Summer Institute of International Teachers, contact the ELTI Program Director at the Center for International Studies.

## EXCHANGE PROGRAMS

Students may complete a semester or academic year of study toward the baccalaureate degree at selected colleges and universities in the United States and foreign countries through The University's participation in the National Student Exchange Program and the International Student Exchange Program.

**National Student Exchange.** The National Student Exchange Program offers a new kind of educational opportunity for sophomores and juniors at UNCC. Students can exchange for up to a year of study at one of over 55 colleges and universities throughout the United States through simplified admission processes, assurance of transferability and minimum cost. In this way, students are able to take advantage of areas of academic specialization and strength at other universities while exploring unique cultural, geographical and social experiences normally not available to them. Through these experiences students begin to understand, often for the first time, that vastly different learning styles, lifestyles and values may develop from varied academic and geographical settings. For more information, contact the National Student Exchange coordinator in the Bonnie E. Cone University Center.

**International Student Exchange Program.** UNCC is one of approximately 80 U.S. institutions of higher education which are members of the International Student Exchange Program. This program permits the UNCC student to exchange with students from Africa, Asia, Australia, Canada, Europe and Latin America. The UNCC students pay their regular tuition, fees, room and board at UNCC and exchange places for the year with students from institutions outside the United States who have similarly covered their cost of tuition, fees, room and board. The student is registered at the foreign institution, taking the same courses, having the same assignments and participating in the same activities as all other students at that institution. This program permits the student to be exposed daily to a different set of cultural values, to new ideas and new world views. ISEP exchanges are small in scale, with only a few students going to each foreign institution. Information regarding the ISEP exchange may be obtained from the Center for International Studies.

## HONORS PROGRAMS

Honors courses and programs were established at UNCC to permit creative, imaginative and exceptional students to develop their academic potential fully. Various opportunities permit students to tailor a program of honors work uniquely suited to their interests and to the requirements of their academic specialty. Students from every discipline and college are involved in some type of honors work and all honors offerings provide opportunities for close interactions with faculty and other honors students.

Involvement in honors work at UNCC may take a variety of forms. There are departmental honors programs typically completed by majors in the Departments of Biology, Chemistry, English, History, Mathematics, Performing Arts, Physics, Psychology, and Visual Arts. Additionally, the Departments of English, Mathematics, Political Science, Psychology and Sociology offer special honors courses that are open to interested students from all colleges and academic specialties. Finally, the University Interdisciplinary Honors Program provides an opportunity for students to do honors work that cuts across a broad variety of departments and areas, beginning in the freshman year. Students may be involved in honors work simply by taking an occasional course, or they may complete the Interdisciplinary Honors Program, a department program, or both.

Students interested in pursuing honors work should refer to specific departments listed in this section of the *Catalog* or contact the chairperson of the department. Information pertaining to the Interdisciplinary Honors Program is given on pages 223 and 224.

**Honors Certification: University Requirements.** Successful completion of any honors course noted on a student's academic record and completion of an honors program is inscribed on the diploma and announced at graduation as well.

To qualify for graduation with honors recognition in a specific program, a student is required to (a) have at least a 3.50 GPA for all honors courses completed in the program; (b) complete an acceptable honors thesis; (c) receive at least three hours of *A* for their honors thesis research; (d) be recommended by the program's Honors Committee for graduation with honors; and (e) complete any additional requirements specified for the program.

## INTERDISCIPLINARY PROGRAMS OF STUDY

The University of North Carolina at Charlotte offers several interdisciplinary programs: American Studies, Communication Studies, Gerontology, Interdisciplinary Honors, International Studies, and Women's Studies. For more information about these programs and their requirements, see pages 217-226.

## INTER-INSTITUTIONAL REGISTRATION

Full-time undergraduate and graduate students may enroll in courses *not offered at UNCC* which are offered at other participating institutions without paying additional tuition and fees. The courses appear on the student's UNCC transcript and are computed in his/her grade point average. Members of the inter-institutional registration program are: University of North Carolina at Greensboro, North Carolina State University, University of North Carolina at Chapel Hill and Duke University. (See page 66 of this *Catalog* for registration procedures.)

## PREPARATION FOR PROFESSIONAL SCHOOLS

Students may begin preparation at The University of North Carolina at Charlotte for a number of professional careers. Depending upon the professional school's requirements, the student may wish to take a degree at The University of North Carolina at Charlotte or to transfer after one, two or three years.

Preparation for the following programs is offered: chemical engineering, dentistry, forest resources, journalism, law, medical technology, medicine, optometry, pharmacy, social work and veterinary medicine.

The student who plans to enter a professional school is advised to plan his/her program so that general requirements for the bachelor of arts or bachelor of science degree are met in addition to the requirements for the professional program being considered. The student planning to attend a professional school should inform his/her adviser of his/her plans. The student should become familiar with the requirements of the school which he/she plans to attend.

**Chemical Engineering.** Students seeking a program in chemical engineering should consult the Department of Chemistry for advice concerning available options. However, those students desiring to obtain the Bachelor of Science in Chemical Engineering degree may do so by transferring to North Carolina State University after spending two years at The University of North Carolina at Charlotte. *To be eligible for such transfer, the student must meet the admissions requirements for transfer at North Carolina State University.* After transfer, an additional two years normally will be required for the degree.

The following courses are ones which most closely resemble courses suggested for chemical engineering students at North Carolina State University.

**First Year**

Chemistry 1101, 1101L, 1102, 1102L (or 1106L)
Engineering 1100
English 1101 and 1102
Mathematics 1141, 1142
Physics 2221, 2221L
Mechanical Engineering 1102
Physical Education (two semesters)
*Elective (one semester)

**Second Year**

Chemistry 2131, 2131L, 2132, 2132L
Electrical Engineering 2161, 2162
Mathematics 2141, 2171
Physical Education (two semesters)
Physics 2231, 2231L
*Electives (two semesters)

**A one-semester course in each of the following areas is required before graduation from North Carolina State University: economics, English literature, history, or philosophy of science.*

**Dentistry and Medicine.** The composite requirements for entrance to most medical and dental schools in North Carolina, South Carolina, Georgia, Tennessee and Virginia are as follows:

Biology ..... 8 hours
General Chemistry ..... 8 hours
Organic Chemistry ..... 8 hours
(Some schools require additional chemistry)
*(Required by half the schools surveyed)*

Physics ..... 8 hours
English ..... 6 hours
Foreign Language ..... 9-12 hours
*(North and South Carolina only)*

*Pre-Med Committee.* The UNCC Pre-Med Committee consists of faculty members from throughout The University and serves as the main advisory and recommending body for UNCC students seeking entrance to health professional careers and education. Students working toward entrance in health professional schools are advised to work closely with this committee throughout their study at UNCC. Contact the Office of Academic Affairs for the name of the committee chairperson.

**Forest Resources.** At UNCC students may take the first two years of a program leading to a bachelor's degree in forestry or recreation from North Carolina State University in Raleigh. To be eligible for transfer the student must meet the admissions requirements for transfer to North Carolina State University. It is suggested that pre-forestry students take Biology 2111, 2112, 2041 and 4144; Chemistry 1101, 1102; Economics 2101, 2102; English 1101, 1102; Mathematics 1103, 1221, 1141, 1142; Physics 1101, 1102; Physical Education—four hours; and Social Studies or Humanities—six hours. Students enrolling in recreation and park administration may substitute Mathematics 1120, 1221 for 1141, 1142 and are not required to take physics.

**Journalism.** A number of institutions accept graduate students in Journalism with the background of a liberal arts degree. Other institutions accept students transferring to an undergraduate program at the junior year with a liberal arts background.

**Law.** The University suggests that the student planning to enter law school have an understanding of the value of English literature and composition, American history, psychology, logic and ethics, political science, economics, government, accounting, mathematics, sociology, Latin and modern languages and criminal justice. Preparation should include comprehension and expression in words, critical understanding of human institutions and values and creative power in thinking. Thus, any of several majors with wisely selected electives might provide the broad educational background needed.

*Pre-Law Committee.* The UNCC Pre-Law Committee comprises faculty and staff members from throughout The University and is established to assist in advising students who are planning to seek admission to law school following graduation from UNCC and to provide liaison with and assist pre-law students to meet local attorneys. Students working toward entrance into law schools and the legal profession are advised to work closely with this committee. Contact the Office of Academic Affairs for the name of the committee chairperson.

**Medical Technology.** The University, through affiliation with several schools of medical technology, offers programs leading to baccalaureate degrees in biology and chemistry, with training in medical technology. Students interested in this four-year program are advised to check the more detailed listing under the individual departments and to consult with the appropriate adviser in the Department of Biology or Chemistry.

**Optometry.** Schools of optometry tend to require a minimum of three years of undergraduate study, the first two of which are similar to the following two-year program listed for pharmacy. Advising for students interested in pre-optometry preparation is available in the departments of Biology, Chemistry, and Physics.

**Pharmacy.** Students planning to seek a Bachelor of Science in Pharmacy degree may spend either one or two years at The University of North Carolina at Charlotte. One year is recommended for students transferring to a four-year pharmacy school; two years are recommended for students transferring to a three-year pharmacy school such as The University of North Carolina at Chapel Hill.

The following courses are equivalent to those required for transfer into the pharmacy school at UNC-Chapel Hill:

English 1101 and 1102
Mathematics 1103, 1141
Foreign Language: through 2200
Biology 1110 or 2111 and 1273, 1273L
Chemistry 1101, 1101L, 1102, 1102L, 2131, 2131L, 2132, 2132L
Physics 1101 and 1102

Students must select one course from each of the following groups for a total of four courses:

Group 1: English 2101, 2102, 2104, 2111, 2112; Theatre 1101; Music 1132
Group 2: Religion 1101; Philosophy 2101
Group 3: Economics 2101
Group 4: History 1120, 1121, 1160, 1161, 3101, 3102, 3135, 3136
Physical Education: Two semesters of physical education activities are required.

**Social Work.** Students planning to attend a graduate school of social work are advised to pursue a course of study which involves substantial preparation in the social sciences and humanities. Whichever major is chosen, the student should select a variety of courses pertaining to human development as well as the social, cultural, political and economic contexts of living. The student should also take social science research and social statistics courses.

**Veterinary Medicine.** Through careful planning with their academic advisers, it is possible for UNCC students to meet the requirements for admission to the School of Veterinary Medicine at North Carolina State University.

The following UNCC courses must be completed *by the time of application* to the School of Veterinary Medicine:

| | | | |
|---|---|---|---|
| English, general | 6 hours | Biology, BIOL 2111, 2112 | 8 hours |
| Math, MATH 1103, 1120, 1220 | 9 hours | BIOL 3166, Genetics | 3 hours |
| Physics, general | 8 hours | BIOL 4255, Microbiology | 4 hours |
| Chemistry, Inorganic | 8 hours | BIOL 4293, Comparative | |
| Organic Chemistry | 8 hours | Anatomy | 4 hours |
| Biochemistry | 3 hours | | |

Applicants must also have completed the following courses which are *not* available at UNCC: Medical Terminology—2 hours; and Animal and/or Poultry Science with at least one course in animal nutrition—7 hours. These courses are available through transient study from North Carolina State University or North Carolina Agricultural and Technical University.

## ROTC PROGRAMS

**Air Force ROTC.** Students who desire the opportunity to serve as commissioned officers in the Air Force may elect to participate in the Air Force Reserve Officers' Training Corps (ROTC) Program as part of their academic program. This program is divided into two phases, the two-year General Military Course (GMC) for freshmen and sophomores, and the two-year Professional

Office Course (POC) for juniors and seniors. Selection for the POC takes place during the sophomore year for cadets who have demonstrated sound academic and leadership qualities. Qualified juniors and seniors may participate in the Flight Selection Program (FSP) during their last two years of college. There is no military commitment for students who take only the two-year GMC. Graduate students are eligible to participate in AFROTC and to compete for scholarships. For more information see pages 266-267.

**Army ROTC.** Students at The University of North Carolina at Charlotte may elect to participate in the Army Reserve Officers' Training Corps (ROTC) Program as a part of their academic program. Students successfully completing the military science curriculum will be commissioned second lieutenants in the Regular Army, Army Reserve or National Guard. Army ROTC is a four-year program consisting of the Basic Course (freshman and sophomore years) and the Advanced Course (junior and senior years). No military commitment is incurred from participation in the Basic Course. For more information, see pages 268-269.

## STUDY ABROAD

**Travel and Study Abroad.** The Center for International Studies offers UNCC students the opportunity to travel and study abroad either for a year, semester or summer term. Programs during the summer are arranged in a variety of countries each year. In cooperation with the Department of Foreign Languages, intensive summer language programs are offered in Canada, Germany and Mexico. A student should contact the Center for International Studies no later than March 30 to be considered for a summer travel/study program.

Students may study for a semester or an academic year in Copenhagen, Denmark, through Denmark's International Study Program. Approximately 35 courses are offered in liberal arts with specializations in Architecture, Social Welfare and Business Administration. Students of sophomore or junior standing are preferred and a grade point average of 2.5 is required. Although no scholarships are available for this program, many students who are receiving financial aid during a regular academic year will be eligible to continue receiving aid while participating in this program. Students may study for the fall semester in India. This program specializes in the humanities.

For more information on study abroad, contact the Center for International Studies. See also "Exchange Programs" in this section.

## VENTURE PROGRAM

Venture recognizes the natural environment as a means for developing initiative, creativity, physical health, and a sensitivity to the environment and other people. The Venture program is designed to facilitate individual growth through physical challenge, group interaction and feedback and personal reflection. It offers a variety of non-credit courses, workshops and seminars that utilize outdoor settings to provide opportunities for active, experiential learning.

Venture also offers courses each semester and during the summer sessions for academic credit. Outdoor, natural environments are utilized to present a series of progressively difficult problems or challenges. While course settings and activities may vary by season and safety considerations, the basic format of each course is similar. Enrollment is limited to ensure full participation and to ease our environmental impact. Through active experience, group debriefings and personal reflections, students are encouraged to examine lifestyles and values while developing a greater sensitivity to the needs of others. Contact the Department of Health and Physical Education for additional information.

# The Graduate School

# THE GRADUATE SCHOOL AT UNCC

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## Administration

Robert W. Carrubba, *Dean of the Graduate School*

College of Architecture; Charles C. Hight, *Dean*
College of Arts and Sciences; Schley R. Lyons, *Dean*
College of Business Administration; Richard E. Neel, *Dean*
College of Education and Allied Professions; H. William Heller, *Dean*
College of Engineering; Robert D. Snyder, *Dean*
College of Nursing; Nancy F. Langston, *Dean*

The Graduate Council 1986-1987

*Chairperson:* George S. Rent, Sociology and Anthropology
Robert Carrubba, Dean of the Graduate School
Kent Curran, Business Administration
Owen Furuseth, Geography and Earth Sciences
Michael Green, Curriculum and Instruction
Julian Mason, English
Pauline Mayo, Nursing
Charlie Mitchell, Architecture
Abolhassan Modaress-Razavi, Computer Science
John Neill, Director of Enrollment Services
James Oliver, Biology
Elie Saliba, Graduate Student Association

# The Graduate School

## HISTORY AND ORGANIZATION

The University of North Carolina at Charlotte was established in 1965 by the North Carolina General Assembly which transformed Charlotte College, with beginnings in 1946, into a campus of The University of North Carolina. The Graduate School was established in 1985 with the appointment of the first Dean of the Graduate School, although graduate degree programs have been offered since 1969. Today more than 300 members of the Graduate Faculty and nearly 2,000 graduate students participate in a broad array of graduate programs at the master's level, in Certificate of Advanced Study programs, and in two cooperative doctoral programs. During the 1985-86 academic year, 324 graduate degrees and 36 Certificates of Advanced Study were awarded.

The executive and administrative affairs of the Graduate School are carried out by the Dean of the Graduate School, who acts in cooperation with the deans of the six colleges of Architecture, Arts and Sciences, Business Administration, Education and Allied Professions, Engineering, and Nursing.

**The Graduate Council,** whose voting members are elected by the faculty, reviews, develops and makes recommendations concerning Graduate School policy. All curricular proposals and all criteria for membership in the Graduate Faculty come before the Graduate Council, which also creates appropriate committees and hears grievances. In addition, the Graduate Council serves in an advisory capacity to the Dean of the Graduate School.

**The Graduate Faculty.** In accordance with criteria developed by each graduate program or unit and approved by the Graduate Council, the Dean of the Graduate School appoints faculty members to membership on the Graduate Faculty for a renewable term of five years. Members of the Graduate Faculty offer courses and seminars and supervise research and theses at an advanced level of scholarship.

**The Graduate Student Association** was chartered in 1986 and serves as the official organization for UNCC graduate students, all of whom are automatically members. Its purposes include: (a) establishment of an appropriate voice for graduate students; (b) assistance with their special social, emotional, intellectual and physical needs; and (c) liaison with the administration and faculty. The GSA holds monthly meetings, sponsors social events, and publishes a newsletter.

## UNIVERSITY FACILITIES AND SERVICES

UNCC is the fourth largest university in North Carolina. It became the fourth campus of the University of North Carolina's sixteen-campus system in 1965. The University serves high-tech industry as one of five university members of the Microelectronics Center of North Carolina. Outreach activities include continuing education and extension, international studies, urban research and service, a 100,000-watt FM public radio station, and botanical gardens.

UNCC offers a full range of facilities and services to accommodate the needs of students. The chapter "The University" on pages 8-23 in this *Catalog* provides information about parking and traffic, safety services, educational facilities, educational support services, continuing education, health and counseling services, and other student services and facilities.

**Research Facilities.** The J. Murrey Atkins Library houses an open-shelf collection of more than 350,000 bound volumes and more than 650,000 units in microform. The facility features the latest in library technology, including a computerized, on-line catalog system—the first for an academic library in North Carolina. Approximately 4,600 current periodicals and serials are received through subscription. The University's well-equipped laboratories are housed in contemporary buildings that were constructed during the last 25 years. A new $9.8-million state-of-the-art physical sciences building was dedicated in September 1985.

**Housing and Food Services.** Room and board are available on campus for unmarried students. The cost in 1985-86 ranged from $2,138 to $2,777 depending upon the options chosen. Private housing adjacent to the campus is readily available for married and single students. City transit is available to campus for students choosing to live elsewhere in the community. For more information regarding housing and food services, see pages 17, 18, 53 and 54.

## FINANCIAL INFORMATION

Detailed information regarding tuition, fees, financial aid, and other related topics may be found on pages 49-61 in this *Catalog* in the chapter "Financial Information." For graduate students, financial assistance programs consist of grants, loans, and employment opportunities, including graduate assistantships. Grants are generally limited to North Carolina residents in the amount of tuition and fees for full-time attendance and are funded through the State Tuition Grant program and the Minority Presence Grant program. Available loans include the 5 percent National Direct Student Loan and the 8 percent Guaranteed Student Loan. To apply for the grant and loan programs, and for employment under the federal College Work-Study Program, students should complete the Financial Aid Form of the College Scholarship Service before the established priority date of April 15 preceding the school year.

Approximately one half of The University's full-time graduate students hold graduate assistantships with award amounts ranging from $4,000 to $7,000 for two semesters. To apply, students should contact the Graduate School office. The University also operates a Job Location and Development (JLD) Service to assist students seeking part-time and summer employment opportunities off campus. For this assistance, students should call or visit the JLD office in the UNCC Placement Office.

**Graduate Assistantships.** The University has a limited number of graduate assistantships in the fields of biology, business administration, chemistry, computer science, education, engineering, English, geography, history, mathematics, political science, psychology and sociology. Such financial support will be extended to other areas of study as rapidly as resources become available. Application for a graduate assistantship should be filed in writing with the appropriate department through the Graduate Admissions Office not later than the February preceding the fall semester for which the assistantship is desired.

**Graduate Fellowships.** The Microelectronics Center of North Carolina (MCNC) has allocated a limited number of $12,000 fellowships to UNCC for outstanding students in graduate programs relevant to microelectronics. Information about MCNC Fellowships is available from the Graduate Admissions Office.

**North Carolina Minority Presence Grant Program.** Under the University of North Carolina Board of Governors general Minority Presence Grant Program, black students may be eligible for special financial assistance if they are residents of North Carolina, enrolled for at least three hours of degree-credit course work, and demonstrate financial need.

**Employment.** The Office of Student Financial Aid assists students in locating work on campus. The University participates in the federal Work-Study Program and attempts to match students with jobs related to their academic interests. Graduate students as well as undergraduate students may request University employment. However, all graduate students seeking employment must have the approval of their department heads.

# Admission To The University

The University considers all applications without regard to race, color, sex, national origin, handicapped status, age or religion. The University reserves the right to withhold the admission of any applicant who fails to meet any of the requirements for admission. In addition, it reserves the right to restrict enrollments when necessary because of budgetary or other constraints. Applications for either regular semester or the summer terms should be submitted and completed no later than the dates published in this *Catalog*. In some programs, the vacancies will be filled several weeks prior to those deadlines.

All applicants for admission are reviewed as soon as the required credentials are received. All relevant factors are considered, with major emphasis being placed on the academic history of the applicant. The intent of The University is to offer admission to those applicants whose credentials indicate a strong likelihood for success in their selected curricula.

Evidence of good physical and mental health is required prior to registration. A medical report form is sent to successful applicants along with the notice of admission. **As of July 1, 1986, state**

**law requires all students entering college in the state of North Carolina to meet the immunization requirements described on page 46.** A family physician or the Health Department must verify that the student has had necessary immunizations.

Persons seeking application forms and information should address inquiries to:

GRADUATE SCHOOL UC
THE UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE
CHARLOTTE, NC 28223
TELEPHONE: 704/547-4850

## ADMISSION CLASSIFICATIONS

Admission to one of these categories does not imply and should not be confused with later admission to candidacy for a graduate degree.

**Full Standing.** Applicants who meet the general requirements for admission to graduate study plus any specific requirements imposed by the college or department of academic concentration for the degree sought will be admitted to full standing.

**Conditional Standing.** Conditional admission to full standing may be granted to students who have: (a) general or special deficiencies which require remedial work; (b) degrees awarded as long as six years prior to admission; or (c) a less clearly predicted chance of success according to available criteria. Each student granted a conditional admission will be responsible for contacting his/her adviser when he/she has successfully satisfied the conditions for admission to full standing. The adviser will then be responsible for contacting the Registrar's Office in writing, concerning any change in the student's admission status.

**Post-Baccalaureate Students.** Students who wish to take courses beyond the baccalaureate degree for certificate renewal, for transfer to another institution, as prerequisites for admission to a graduate degree program or for personal satisfaction may be admitted as post-baccalaureate students. This classification is not open to foreign nationals who are on student visas. A post-baccalaureate student (PBS) who is subsequently admitted to full or conditional standing in a degree program on the basis of an approved regular application may, with the permission of his/her adviser, apply a maximum of six hours acceptably completed in the post-baccalaureate status toward a degree. The following policies apply to students who wish to register as post-baccalaureate students:

1. Post-baccalaureate students must have a baccalaureate degree from an accredited institution of higher education.
2. Post-baccalaureate students may register for course work at any level for which they have the prerequisites.
3. Post-baccalaureate students will be subject to the academic regulations and standards required of degree students.
4. The PBS classification carries with it no implication that a student will be admitted to a degree program.
5. Post-baccalaureate students will be assessed tuition and fees based on the level of courses for which they are enrolled. If enrolled in any course for graduate credit, they will be assessed graduate fees for all courses.
6. A post-baccalaureate student who is subsequently admitted to a graduate degree program may request that a maximum of six hours completed for graduate credit be used for his/her program. All course work must be approved by the student's department and listed on the student's Admission to Candidacy form.

**Unclassified Students.** An applicant wishing to take more than nine hours of graduate course work and who does not intend to seek a master's degree may be admitted to full standing as an unclassified student. A completed application form, together with all supporting data, should be filed in the Graduate Admissions Office prior to the application deadline date for the term in which the applicant wishes to enroll. If such applicant meets the general criteria for admission, he/she may then be admitted to full standing as an unclassified student.

**Readmission.** Post-baccalaureate and graduate students whose enrollment is interrupted will remain eligible to register for two calendar years without having to reapply for admission to The University if they are in good standing and have not exceeded the six-year limit. After an absence of more than 24 months, the student must apply for readmission; acceptance is subject to departmental approval.

Students whose enrollment is terminated for academic reasons may request readmission in accordance with academic regulations published in this *Catalog*.

**Transient Students.** Students enrolled at other colleges and universities who have written permission from their institutions to take specified courses at The University in a given semester or summer term may be enrolled as transient non-degree students.

**Auditors.** With the consent of the instructor, any student eligible for admission may register for any class for audit. The application procedure and fees are the same as for classes taken for University credit. (See academic regulations pertaining to auditors on page 66 in this *Catalog.)*

**Non-Matriculation.** An applicant admitted to a degree program who fails to enroll for the term to which admitted is presumed to have withdrawn his/her application. The application may be reinstated if the request to do so is received within one year from the originally requested term of entry. This request should be in writing and addressed to the Graduate Admissions Office at least six weeks prior to the term in which the applicant desires to register.

## GENERAL REQUIREMENTS FOR GRADUATE ADMISSION AT THE MASTER'S LEVEL

1. Application in writing submitted to the Graduate Admissions Office, accompanied by a $15.00 application fee, which is neither deductible nor refundable.
2. Possession of a bachelor's degree, or its equivalent, from an accredited college or university.
3. Two official transcripts of all previous academic work attempted beyond high school sent directly to the Graduate Admissions Office from each institution attended. Transfer credit posted on the records of other institutions is unacceptable and official transcripts of these credits must be supplied.
4. Satisfactory test scores as specified in the section of this *Catalog* entitled "Additional Requirements for Acceptance into Specific Graduate Programs."
5. An overall grade point average of at least 2.50 (based on the 4.0 system) on all of the applicant's previous work beyond the high school. The average of the major or basic courses prerequisite to the area of proposed graduate study should be 3.0 or better.
6. At least three evaluations from persons familiar with the applicant's personal and professional qualifications.
7. An essay describing the applicant's experience and objective in undertaking graduate study.
8. Acceptance into a specific program must be approved by the department or college offering the program. Meeting minimum requirements for admission does not guarantee acceptance into a program. The University reserves the right to restrict enrollments when necessary because of budgetary and other constraints including the availability of faculty expertise in a specified area of study and the enrollment limitation established by the North Carolina General Assembly.

The application for admission and supporting credentials must be received in the Office of Graduate Admissions at least 30 days prior to the first day of class for the semester in which the applicant plans to enter the Graduate School. Materials submitted in support of this application cannot be returned. Some programs have earlier deadlines and limited space.

Students who meet the foregoing requirements but do not wish to enroll in a specific degree program may be admitted to full standing as unclassified students.

Certain other applicants who satisfy prerequisites for specific courses may be admitted to those courses as post-baccalaureate students though they may not meet all the foregoing requirements. Students admitted as post-baccalaureate students who later wish to qualify for full standing must reapply for the new classification.

A person will be considered for admission to a degree program only after the application and all its supporting credentials have been filed with the Graduate Admissions Office. Any supporting credentials that are submitted without an application will be maintained on file in the Graduate Admissions Office for one year. Applications with supporting credentials will be maintained on file for one year for individuals who are admitted to degree programs but who do not enroll in the term for which their admission was processed. The applications and supporting credentials for individuals who are found not to be admissible to degree programs will be maintained on file for one year. Persons who do not submit their materials in time to be considered for admission in the term which they have requested are expected to notify the Graduate Admissions Office if they wish to be considered for admission to any subsequent term.

## GENERAL REQUIREMENTS FOR GRADUATE ADMISSION AT THE SIXTH-YEAR LEVEL FOR THE CERTIFICATE OF ADVANCED STUDY (CAS)

1. Application in writing, submitted to the Graduate Admissions Office, accompanied by a $15.00 application fee, which is neither deductible nor refundable.
2. Master's degree and *B* average or better.
3. "G" Certificate or equivalent in appropriate area.
4. Two official transcripts of all graduate work sent directly to the Graduate Admissions Office from each institution attended.
5. Satisfactory scores from the Aptitude Portion of the Graduate Record Examination or the Miller Analogies Test.
6. Recommendations and/or nominations from professionals who know of the applicant's work.
7. An essay describing recent professional experience in roles related to the position for which advanced certification is sought.

## ADDITIONAL ADMISSIONS REQUIREMENTS FOR FOREIGN APPLICANTS

1. Submission of Official Scores on the Test of English as a Foreign Language or the Michigan Test, if the applicant is from a non-English-speaking country. International students who are academically admissible *may* be granted conditional admission to a degree program prior to satisfying the English language and/or standardized entrance examinations requirements. Each department/college will specify the terms for satisfying stated conditions within a given time period and will clearly outline the terms in each student's notice of admission. Full graduate admission status will be granted when all conditions have been met.
2. A Certificate of Financial Responsibility must be filed showing the applicant's financial resources during his/her stay in the United States.
3. Under no circumstances will an I-20 Form be issued until the applicant has been admitted to a degree program.

All applicants submitting transcripts from non-U.S. educational institutions should note that some bachelor's degrees given by non-U.S. schools are not equivalent to the American bachelor's degree. Recipients of these degrees are not eligible for graduate study at The University of North Carolina at Charlotte.

## ADDITIONAL REQUIREMENTS FOR ACCEPTANCE INTO SPECIFIC GRADUATE PROGRAMS LEADING TO THE MASTER OF ARTS (M.A.) DEGREE

### English

1. Thirty semester hours of undergraduate course work in English beyond the freshman level, or evidence of equivalent academic preparation for graduate study in English, as approved by the Department of English.
2. A satisfactory score on the Aptitude Portion of the Graduate Record Examination or on the Miller Analogies Test.

### Geography

1. An overall grade point average of at least 2.8 (4.0 system) on the last 60 semester hours (90 quarter hours) attempted.
2. A grade point average of 3.0 in the undergraduate major, whatever it may be.
3. A satisfactory total score on the Aptitude Portion of the Graduate Record Examination or satisfactory scores on both the Miller Analogies Test and the Doppelt Test of Mathematical Reasoning.
4. An undergraduate major in geography is *not* required. In order to ensure competence in the basic concepts and methodologies of geography, however, the Department expects each incoming student to either possess or establish a proficiency with materials offered in several undergraduate courses.

   For students in the Location Analysis and the Urban-Regional Analysis and Planning concentrations, these courses are GEOG 1105 (Human Location), and GEOG 2100 (Maps and Graphs) and GEOG 2110 (Research Methods).

   The relevant courses for the Environmental Analysis concentration are ESCI 1101 (Earth Science-Geography), ESCI 1102 (Earth Science-Geology), GEOG 2100 (Maps and Graphs) and GEOG 2110 (Research Methods).

Deficiencies may be removed after admission by either taking the appropriate course or through examination.

Students may enter during any semester. All applicants for admission who satisfy general Graduate School admission requirements will be reviewed by a Departmental Graduate Advisory Committee for a final decision. Upon admission, each student will be assigned to an adviser who will work with the student in designing a program of study. All potential applicants are encouraged to visit the Department of Geography and Earth Sciences for an interview.

**History**

1. All applications for admission must be approved by the Graduate Committee of the Department of History.
2. Although an undergraduate major in history is not required, substantial preparation in history or related fields, i.e., political science, foreign languages, English, will weigh heavily.
3. A satisfactory score is required on the Aptitude Portion of the Graduate Record Examination.
4. The Department reserves the right to admit with specific conditions or to establish prerequisites for admission for applicants who do not clearly meet every requirement for admission.

**Mathematics**

1. Applicants must present evidence of the satisfactory completion of at least 27 semester hours of mathematics approved by the Departmental Graduate Committee.
2. A satisfactory score is required on the Aptitude Portion of the Graduate Record Examination.
3. It is recommended that the student have a basic knowledge of at least two of the areas of algebra, real analysis, and topology.

**Mathematics Education**

1. Eighteen hours of approved undergraduate work in mathematics.
2. Evidence of satisfactory scope and grade point average in undergraduate courses in professional education.
3. Possession of a North Carolina Class "A" teacher's certificate or the equivalent. An applicant may be admitted on the condition that he/she satisfy the Class "A" requirements early in his/her course of study. Work applied to the Class "A" deficiency may not be applied toward the degree.
4. A satisfactory score on the Aptitude Portion of the Graduate Record Examination or the combination of the Miller Analogies Test and the Doppelt Test of Mathematical Reasoning.

**Psychology**

1. A minimum of 18 hours of undergraduate psychology, including general psychology, research methods and statistics.
2. A minimum overall undergraduate grade point average of 2.8 (on a 4.0 scale) and at least a 3.0 average in all psychology courses attempted.
3. Satisfactory scores on the Aptitude and Advanced Psychology portions of the Graduate Record Examination.
4. Psychology currently accepts graduate students for fall semester enrollment only.

**Sociology**

1. An overall undergraduate grade point average of 3.0 (on a 4.0 scale).
2. A satisfactory score on the Aptitude Portion of the Graduate Record Examination.
3. A minimum of 18 hours of undergraduate courses in social science.

## ADDITIONAL REQUIREMENTS FOR ACCEPTANCE INTO SPECIFIC PROGRAMS LEADING TO THE MASTER OF SCIENCE (M.S.) DEGREE

**Biology**

1. Evidence of undergraduate preparation in biology with a minimum of 24 semester hours in biology and 24 semester hours of cognate sciences.
2. A satisfactory score on the Aptitude Portion of the Graduate Record Examination.

**Chemistry**

1. A satisfactory score on the Aptitude Portion of the Graduate Record Examination.
2. Students judged by the Chemistry Department to be deficient in their training may be admitted conditionally.
3. As an aid in identifying such deficiencies, placement examinations will be given by the Department each semester just prior to registration.
4. Any deficiencies will be removed within one year by remedial study as directed by the Department.

**Criminal Justice**

1. Each applicant must be approved by the Graduate Committee of the Department of Criminal Justice.
2. A minimum overall grade point average of 2.75 (based on a 4.0 system) on all the applicant's previous college work.
3. A percentile score of at least 25 on the Aptitude Portion of the Graduate Record Examination or the Miller Analogies Test.
4. An undergraduate major in criminal justice is *not* required. In order to insure competence in the basic concepts of criminal justice, however, the Department expects each incoming student to either possess or establish a proficiency with the materials offered in the three courses required for undergraduate majors:
   1. CJUS 2100—General Criminal Justice
   2. CJUS 3100—Criminal Justice Theory
   3. CJUS 3101—Research Methods in Criminal Justice

   The Admissions Committee shall assess the academic background of each applicant and, in those cases involving deficiencies in these areas, may indicate remedial action to be required of the student.
5. In addition to the statement of professional career growth and description of any significant work experience, the applicant may provide any written materials which he/she wishes to have considered in the admission decision.

**ADDITIONAL REQUIREMENTS FOR ACCEPTANCE INTO THE MASTER OF BUSINESS ADMINISTRATION (M.B.A.) DEGREE PROGRAM**

1. A generally satisfactory undergraduate record from an accredited college or university.
2. At least 1000 points on the formula: 200 x the upper division GPA plus the score on the Graduate Management Admissions Test (GMAT) administered by the Educational Testing Service of Princeton, New Jersey.
3. A description of any significant work experience.

**ADDITIONAL REQUIREMENTS FOR ACCEPTANCE INTO THE MASTER OF EDUCATION (M.Ed.) DEGREE PROGRAM**

1. Students must present evidence of satisfactory scope and grade point average in courses in human development and/or professional education and a satisfactory scope and grade point average in courses appropriate to the cognate concentration.
2. Possession of a North Carolina Class "A" teacher's certificate or the equivalent. Applicants may be admitted on the condition that they satisfy the Class "A" requirements. Work applied to correct the Class "A" deficiency may not be applied toward the M.Ed. degree.
3. A satisfactory score on the Aptitude Portion of the Graduate Record Examination or the Miller Analogies Test.

**ADDITIONAL REQUIREMENTS FOR ACCEPTANCE INTO THE MASTER OF HUMAN DEVELOPMENT AND LEARNING (MHDL) DEGREE PROGRAM**

1. Students must present evidence of satisfactory scope and grade point average in courses in human development and/or professional education and a satisfactory scope and grade point average in courses appropriate to the cognate concentration.
2. A satisfactory score on the Aptitude Portion of the Graduate Record Examination or the Miller Analogies Test.

## ADDITIONAL REQUIREMENTS FOR ACCEPTANCE INTO THE MASTER OF SCIENCE IN ENGINEERING (MSE) DEGREE PROGRAM

1. Evidence of satisfactory undergraduate preparation in engineering, usually manifested by the possession of a baccalaureate degree in some area of engineering.
2. Applicants with baccalaureate degrees from fields other than engineering (e.g., engineering physics, chemistry, mathematics, etc.) may be considered for admission to graduate study on a conditional basis. In engineering, such an applicant will be required to remove deficiencies in his or her engineering background as delineated by the department of engineering in which the applicant wishes to pursue his or her major area of study.
3. All conditional admissions are subject to the approval of the College's Engineering Graduate Committee (EGC). Also, subsequent evaluation of such students after completion of 12 hours of graduate work is subject to the approval of the EGC, as are requests for readmission.
4. A satisfactory score on the Aptitude Portion of the Graduate Record Examination or on the combination of the Miller Analogies Test and the Doppelt Test of Mathematical Reasoning.
5. Acceptability for admission is based upon the applicant's records and background as determined by the department of the College of Engineering in which the applicant wishes to pursue his or her major area of study. The department has the prerogative to accept the applicant without reservation, to accept the applicant with conditions, or to reject the applicant. Any conditions are to be clearly stated and agreed to by the applicant before admission is completed.

## ADDITIONAL REQUIREMENTS FOR ACCEPTANCE INTO THE MASTER OF SCIENCE IN NURSING (MSN) DEGREE PROGRAM

1. Current licensure as a Registered Nurse in North Carolina.
2. Baccalaureate degree from a National League for Nursing accredited nursing program.
3. Satisfactory performance on the Aptitude Portion of the Graduate Record Examination.
4. One year of professional nursing practice following completion of the baccalaureate degree.
5. An overall grade point average of at least 3.0 (on a 4.0 system) on the last 60 semester hours attempted.
6. A grade point average of at least 3.0 in the undergraduate nursing major.
7. Completion of baccalaureate courses in statistics and research methods with a grade of *C* or better.
8. Three letters of recommendation which are supportive of the individual's academic, professional and personal potential for graduate study in nursing.

## ADDITIONAL REQUIREMENT FOR ACCEPTANCE INTO THE MASTER OF PUBLIC ADMINISTRATION (MPA) DEGREE PROGRAM

1. A percentile score of at least 25 on the Aptitude Portion of the Graduate Record Examination or on the Miller Analogies Test.

**NOTE:**

Acceptance into one graduate program does not guarantee acceptance into any other program. Acceptance into each program must be approved by the department or college offering the program.

# Student Responsibility

Every student is responsible for the proper completion of his/her academic program, for familiarity with the *University Catalog,* for maintaining the grade average required and for meeting all other degree requirements. The adviser will counsel, but the final responsibility remains that of the student.

A student is required to have knowledge of and observe all regulations pertaining to campus life and student deportment. As students willingly accept the benefits of membership in the UNCC academic community, they acquire obligations to observe and uphold the principles and standards that define the terms of UNCC community cooperation and make those benefits possible. The University has enacted two codes of student responsibility: **The UNCC Code of Student Academic Integrity** and **The UNCC Code of Student Responsibility,** which are summarized on pages 32 and 33 in this *Catalog.*

A student is also responsible for maintaining communication with The University by keeping on file with the Registrar's Office at all times a current address, including zip code, and telephone number.

Every student, while associated with The University, is expected to comport himself/herself in campus and community life in a manner that will reflect credit upon the student and The University.

# Academic Regulations and Degree Requirements

General information regarding academic regulations can be found on pages 63-79 in this *Catalog.* Students should familiarize themselves with the information presented on those pages. Additional information that specifically pertains to graduate students follows below.

## REGISTRATION

The registration process takes place on designated days at the opening of each semester and each summer term prior to the beginning of classes. In addition, students who are already enrolled are given the opportunity to register in advance for the subsequent term during each regular semester. Complete information on registration is presented on pages 65-72. Subjects covered include adding and dropping courses, withdrawal policies, inter-institutional registration, auditing classes, and attendance.

**Late Registration.** Late registration takes place on designated days after the beginning of classes each term. Except under special conditions, no student will be permitted to register after the last day of late registration as announced in the calendar for each semester and summer term. A late registration fee will be charged.

**Registration for Credit.** No credit will be awarded to a student for a course unless he/she is properly registered for it. Graduate credit will not be awarded unless the student is properly registered in a course that has been approved for graduate credit.

**Dual Undergraduate/Graduate Registration.** Undergraduate students at UNCC who are required to take fewer than 12 semester hours of undergraduate work to fulfill all requirements for the bachelor's degree may be allowed during their final semester to enroll in certain courses for the purpose of obtaining graduate credit. Authorization for dual undergraduate/graduate registration may be obtained by submitting to the Dean of the Graduate School a Special Request Form approved by the student's undergraduate academic adviser, the instructor(s) of the graduate course(s),

and the dean(s) of the college(s) offering the graduate course(s), accompanied by the regular application for admission to graduate study and supporting credentials. The total hours to be carried in this status shall not exceed 12 hours, of which no more than nine may be for graduate credit. On the basis of work attempted prior to the final semester, such student must meet the grade point criteria for admission to a graduate degree program at The University. No course for which credit is applied to an undergraduate degree may receive graduate credit. Permission to take graduate courses under dual registration does not constitute admission to any graduate degree program at The University.

**Withdrawal.** Any student voluntarily leaving The University before the close of the term must withdraw officially. A student initiates the withdrawal procedure and files the completed form at the Registrar's Office. A student who is unable to appear in person may notify the Registrar's Office of withdrawal by letter. A withdrawal is effective when the form or letter is received by the Registrar's Office. A student who withdraws from The University will receive the grade of *W* for all courses in progress. In order to return to The University, an undergraduate student must apply and be accepted for readmission unless the withdrawal occurred during a summer session in which case a readmission application is not required. Graduate students who return to The University within two years are not required to apply for readmission.

Any student who leaves The University before the close of a term without withdrawing officially will receive a failing or unsatisfactory grade *(F* for undergraduate credit and *U* for graduate credit) in each course for which he/she is registered. Enrollment will be terminated for any graduate student who receives a *U* and he/she will be required to reapply for admission.

Two weeks prior to the last day of class (or a proportionate period for summer school) is the last date withdrawal transactions are to be processed. (Students who withdraw after that date will receive a grade of *F* or *U.)* No student will be allowed to withdraw after the deadline unless there are extenuating circumstances and the drop is approved by the student's adviser and the dean of the college in which the student is a major.

## COURSE LOAD

A course load of nine semester hours constitutes a normal full semester program for a graduate student. The graduate student's load should be lower than the normal undergraduate load to encourage extensive reading, independent thinking and appropriate individual research. Generally, graduate students should not register for more than 12 semester hours during a semester.

An appropriate course load is dependent upon two factors: the scholastic ability of the student as reflected by his/her academic history and the time available for study. Full-time professional public school employees are limited to one course each semester during the academic school year. Others whose full-time employment totals 40 hours a week should not carry more than seven semester hours.

## CHANGE OF DEGREE PROGRAM

A graduate student may change from one degree program to another if he/she meets the criteria for admission to the new program and is accepted by the new department. The student must file a written request for change with the Graduate Admissions Office, which will forward all credentials to the new department for an admissions decision. The student, department and Registrar will be notified of the decision by letter.

## GRADING POLICIES

Complete information regarding grading policies, grades, credits, and obtaining transcripts is given on pages 67-72. Students are responsible for familiarizing themselves with the material presented on those pages. In addition, the following information pertains specifically to graduate students.

**Grades.** Letters are used to designate the quality of work done.

**Graduate Grades**

| Letter | Meaning | Grade Points Per Semester Hour |
|---|---|---|
| A | Commendable | 4 |
| B | Satisfactory | 3 |
| C | Marginal | 2 |
| U | Unsatisfactory | 0 |
| I | Incomplete | * |
| IP | In Progress | * |
| W | Withdrew | * |
| P | Pass | * |
| N | No Credit | * |
| AU | Audit | * |
| NR | No recognition given for audit | * |

Certain graduate courses such as research seminars, tutorials, internships or theses may be designated for *Pass/No Credit* grading upon recommendation of the offering department and approval of the Graduate Council. The grade of *P* in such a course shall be considered as evidence of satisfactory performance. A grade of *N (No Credit)* will not affect eligibility for continued enrollment nor will it apply toward requirements for the degree.

**Grade Point Average.** The grade point average for a graduate student is based only on those courses in his/her approved program of study taken at UNCC or through the Charlotte Area Educational Consortium. It is determined by multiplying the number of grade points for each grade ($A=4$, $B=3$, $C=2$, $U=0$) by the number of semester hours credit received in that course and adding all accumulated grade points together, then dividing by the total number of semester hours the student has attempted except those for which the student received a grade of *I, IP, W, P, N, AU,* or *NR*. When a course not listed as "May be repeated for credit" is repeated, no additional credit hours attempted accrue and the hours earned and grade points of the previous grade are replaced by those of the current grade.

**Repeating a Graduate Course.** A graduate student will be allowed to repeat a maximum of two courses in which the student has been assigned a grade of *C, U* or *N* (but not an *I)*. A given course may be repeated one time only. Whenever a course is repeated, no additional hours attempted accrue, and the new grade replaces the previous grade in computing the grade point average and in the assignment of academic credit. The record of the first attempt will remain a part of the student's permanent record and will count in the number of marginal *(C)* grades accumulated. Successfully repeating a course does not change the number of marginal *(C)* grades accumulated.

## REQUIREMENTS FOR CONTINUED ENROLLMENT

A student enrolled in any graduate program should maintain satisfactory progress toward the degree. He/she is expected to achieve a commendable or satisfactory grade *(A* or *B)* in all course work attempted for graduate credit.

An accumulation of three marginal *(C)* grades will result in termination of the student's enrollment in the graduate program. If a student makes a grade of *U* on any course, enrollment will be terminated.

A graduate student whose enrollment has been terminated because of grades is ineligible to attend the summer session unless properly readmitted.

A student readmitted to the graduate program through the reapplication procedures will be expected to complete the degree program with satisfactory or commendable performance. Should the student receive a grade of *C* or *U* after being readmitted to the program, his/her enrollment in the graduate program will be terminated.

## REQUIREMENTS FOR READMISSION AFTER ACADEMIC SUSPENSION OR TERMINATION

Students whose enrollment is terminated for academic reasons must apply and be readmitted in order to continue their program of study. After notification of termination is received, the student

initiates the reapplication procedure by filing an application for graduate readmission and a letter explaining any extenuating circumstances with the Graduate Admissions Office. If the student was not enrolled when the notice of termination was received, the application must be accompanied by a $15 fee which is not refundable. The Graduate Admissions Office will forward the application to the student's department/college for a recommendation. Applications for non-degree students will be forwarded to the Dean of the Graduate School. The department/college will designate a Readmission Committee to consider the student's appeal for readmission. The committee will be composed of faculty members other than the faculty member(s) who assigned the grades of *C* or *U*. The Readmission Committee shall recommend to the Dean of the Graduate School that the student either be reinstated or dropped from the program. The Readmission Committee will decide each case on its individual merits. The student will be notified of the decision in writing.

## TRANSFER CREDIT

**Transfer Credit from Other Institutions.** Transcripts are evaluated in the Graduate Admissions Office and the results are provided to the applicant and to the department offering the graduate program. Determining the applicability of transferred credits to graduate program requirements is the responsibility of the department offering the program. General rules governing transfer credit:

1. At the time of admission up to six transfer hours credit may be accepted from another accredited institution upon approval of the student's adviser and the Dean of the Graduate School.
2. The grade in any course accepted for transfer credit must be the equivalent of that awarded for commendable *(A)* or satisfactory *(B)* work as defined by UNCC.
3. Courses accepted for transfer are subject to the same time limitation as courses taken in residence.
4. To be considered for transfer credit, the courses must have been undertaken at a *regionally* accredited institution.
5. Courses in which credit is accepted must be appropriate for approved University programs and curricula in which the student is enrolled.

**Credit by Examination.** A student currently enrolled at UNCC may pass a specially prepared challenge examination and receive credit for a University course without having to do the normal course work. The student contacts the chairperson of the department in which credit is sought to request administration of an examination. Since it may not be appropriate to award credit by examination for some courses, the decision to offer an examination is that of the department. If the chairperson authorizes an examination, the student is instructed to pay the fee for credit by examination (see page 54) and to bring the receipt of payment to the examination. Credit by examination will be indicated on the transcript, but no grade points will be awarded. Failure on such an examination will incur no grade point penalty. A department may allow a student to take examinations for courses not offered at UNCC, if it deems it appropriate to do so. No student may challenge a course for which either a passing or failing grade has been received at UNCC.

**Transient Study.** Courses undertaken by UNCC students at other accredited institutions may be transferred to The University subject to the following regulations:

1. The University is not obligated to accept any credit from another institution unless the student has obtained the *prior approval* of the department in which he/she is enrolled and of the Dean of the Graduate School. A Permit for Transient Study form should be completed and filed in the Registrar's Office.
2. No credit wil be accepted below *B* level.
3. The student must request that an official transcript be mailed to the Registrar's Office upon completion of the course. A form for this purpose is available in the Registrar's Office.

## APPLICATION FOR THE DEGREE

Each student should make application for his/her degree on a form obtained from the Registrar's Office no later than the filing date specified in the University calendar. The application must be accompanied by the appropriate filing fee in effect at the time of the application. Degrees are awarded at commencement exercises held at the end of the spring semester; however, the diploma and transcript will reflect the term in which all requirements were completed.

## EARNING A SECOND DEGREE

**Second Master's Degree.** A student is permitted to earn a second master's degree subject to the following conditions: (1) no work applied to a previously awarded degree may be applied to the new degree program; (2) the student must gain admittance to a degree program different from that of his/her previous graduate degree(s) as determined by the HEGIS classification system; and (3) the student must successfully meet all requirements for the new degree.

The University of North Carolina classifies its degree (and certificate) program with a modified version of the system used by the U.S. Office of Education in its Higher Education General Information Survey (HEGIS). The HEGIS system classifies all degree programs for appropriate instructional planning and identification.

## APPEAL PROCEDURES

Any student or applicant may appeal any decision affecting his/her status as a graduate student by submitting a written petition to the Appeals Committee of the Graduate Council in care of the Graduate School after remedies have been exhausted in the appropriate college. The petition shall briefly describe the facts which support his/her claim and the remedy being sought. The petition must be submitted within six calendar months of notification of the action being appealed. After receiving the petition, the chairperson of the Appeals Committee will schedule a hearing as soon as possible. A hearing will be held within 60 days of receipt of the written petition of appeal. Evidence will be received from the petitioner and other parties having information bearing on the appeal. The chairperson of the Appeals Committee shall report its decision on any appeals matter (a) directly to the Dean of the Graduate School and (b) to the Graduate Council at the first board meeting following the hearing. The Dean of the Graduate School shall advise the petitioner in writing of the decision of the Appeals Committee within 30 days after the end of the hearing. Questions about the procedure should be addressed to the Dean of the Graduate School.

## GRADUATE DEGREE REQUIREMENTS

**Residence Requirements.** It is important to note that, generally, **no more than six semester hours of transfer credit are accepted toward a graduate degree.** All other work must be residence credit.

*Residence credit* is credit that is earned under the conditions specified herein and may be applied toward the attainment of graduate degrees at The University of North Carolina at Charlotte. These conditions must be satisfied regardless of the location in which the course is given.

1. Instruction: The instructor must be a member of the Graduate Faculty of UNCC, or "especially qualified" for a particular course under Graduate Council policy.
2. Course(s): The content of each course must be approved by regularly established college, Graduate School and University curricular processes before the course is scheduled or offered.

Residence credit may also be awarded by virtue of an examination administered by the faculty of the department offering credit. A student may also, with the prior approval of the appropriate University of North Carolina at Charlotte department and of the Dean of the Graduate School, take graduate courses for residence and course credit at other accredited institutions.

**Program Approval.** Each student's individual program of study must be approved by his/her department/college.

**Admission to Candidacy.** Upon successful completion of a minimum of 18 semester hours of graduate work and in no case later than two weeks prior to the beginning of the semester in which he/she expects to complete all requisites for the degree, a student should file for Admission to Candidacy on a form supplied by the Registrar's Office. This application is a check sheet approved by the student's adviser, department chairperson and college dean listing all course work to be offered for the degree (including transfer credit and courses in progress.)

Upon receipt of this application, the Dean of the Graduate School will consult with the department concerned to arrange for the scheduling of the comprehensive examination(s) and composition of the examining committee.

**Minimum Hours and Quality.** A student is expected to satisfactorily complete a minimum of 30 to 42 semester hours of approved courses, depending upon his/her individual program, with an overall grade average of 3.00 or better. At least half of the semester hours in the approved program must be in courses available for graduate credit only. No more than six hours evaluated as *C* may be counted toward the minimum hours required for the master's degree.

**Comprehensive Examination.** After admission to candidacy, each student must successfully complete a comprehensive examination. The examination may be written, oral, or both, depending upon the student's specific program requirements.

**Time Limit.** All work offered for the master's degree, including accepted transfer credit, must be completed within a six-year period.

**Course and Other Requirements.** For a description of course and other requirements for specific degrees, consult the specific graduate program in the following pages.

# Graduate Programs and Courses of Study

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## INTERINSTITUTIONAL DOCTORAL DEGREE PROGRAMS

The University of North Carolina at Charlotte participates in two interinstitutional degree programs at the doctoral level: Doctor of Education (Ed.D.) in educational administration and Doctor of Philosophy (Ph.D.) in engineering. The Ed.D. is awarded by the University of North Carolina at Chapel Hill; the Ph.D. is conferred by North Carolina State University.

## GRADUATE PROGRAMS

The following section presents the graduate programs of The University of North Carolina at Charlotte in alphabetical order by subject area, including information regarding degree requirements and course descriptions. A section about "The Microelectronics Program" follows the individual graduate programs. "Other Courses Carrying Graduate Credit" (pages 429-432) lists courses that are not listed in specific graduate degree programs.

## COURSES OF STUDY

Following the description of each degree program are course descriptions. Complete information on course descriptions and the course numbering system appears on page 82 of this *Catalog*.

**Course Numbering.** Up to six hours in **3000**-level courses taken as part of a teacher certification program at UNCC may, by filing a Special Request, be approved for graduate credit. The Special Request must bear the signatures of the chairperson of the department offering the course and the coordinator of the student's certification program. Such approval must be obtained prior to the end of the "add period" of the semester in which the course is taken. *This policy applies only to teacher certification programs.*

Courses numbered **4000-4999** carry graduate credit, although they are primarily designed for advanced undergraduates. Additional work is required by graduate students taking 4000-level courses. Such courses may be listed by course number and title only. Complete course descriptions are presented in the undergraduate section of the *Catalog* according to department.

Courses numbered **5000-5999** are primarily designed for graduate students, although advanced undergraduates may take them for undergraduate credit.

Courses numbered **6000-7999** are for graduate students only.

The second digit in the course number designates special types of courses: 0 for topics, 4 for internships and practica, 5 for cooperative education, 6 for seminars, 7 for honors courses, 8 for independent study and 9 for research.

# Biology

*Degrees:* M.S., M.A. *Coordinator:* James C. Travis

## MASTER OF SCIENCE DEGREE IN BIOLOGY

Graduates of the Master of Science degree program in biology are expected to have breadth of knowledge in the major biological areas and depth of knowledge and technical experience in a selected field of specialization. The program provides broad training in the areas of development, ecology, physiology, microbiology and genetics and encourages specialization through thesis research and participation in specialty courses. Students may include in their program courses in related areas such as biochemistry. Specialization may provide a basis for more advanced studies or enable the student to choose teaching, technical or health-related areas of a vocation.

**Degree Requirements.** The Master of Science program requires successful completion of at least 32 semester hours of course work approved by a supervisory committee. At least 16 of these hours, including two hours of seminar and no more than eight hours of thesis research, must be in courses open to graduate students only. All courses offered for the degree must carry grades of "Satisfactory" or "Commendable" as defined in the current graduate grading system.

In addition to course work, each candidate for a degree must pass an oral candidacy examination and a final oral examination. The candidate must prepare and present a thesis acceptable to the supervisory committee and the Dean of the Graduate School at least three weeks before the date of the final oral examination.

**Admission to Candidacy.** General academic regulations will apply to application for admission to candidacy. In addition to these the applicant should have:

1. Removed any identified entrance deficiencies by the time of application.
2. Successfully completed the candidacy examination.
3. Taken at least 15 hours of graduate work with at least a *B* average.
4. Satisfied the supervisory committee that he/she is qualified to become a candidate, i.e., can fulfill the requirements successfully.

## MASTER OF ARTS DEGREE IN BIOLOGY

The Master of Arts degree in biology is designed for students seeking a graduate degree in biology and choosing to write a thesis based on published scientific literature rather than on laboratory or field research.

**Degree Requirements.** Admission to the graduate program and degree requirements are identical to those of the Master of Science in biology, with the exception that a maximum of four hours of credit for thesis research may be included in the required 32 hours, and three courses of the 32 hours submitted for the degree must include a formal laboratory.

## COURSE DESCRIPTIONS

### BIOLOGY (BIOL)

FOLLOWING ARE COURSES DESIGNED PRIMARILY FOR ADVANCED UNDERGRADUATES WHICH ARE AVAILABLE FOR GRADUATE CREDIT. SEE PAGES 100-101 FOR COMPLETE COURSE DESCRIPTIONS.

395) **BIOL 4000. Special Topics in Biology. (1-4) (1-4G)**

451) **BIOL 4111. Evolution. (3) (3G)**

423) **BIOL 4133. Parasitology. (4) (4G)**

413) **BIOL 4139. Epidemiology. (3) (3G)**

369) **BIOL 4141. Environmental Problems. (3) (3G)**

361) **BIOL 4144. Ecology. (3) (3G)**

361L) **BIOL 4144L. Ecology Laboratory. (1) (1G)**

461) **BIOL 4149. Limnology and Oceanography. (4) (4G)**

335) **BIOL 4161. Human Genetics. (3) (3G)**

437) **BIOL 4169. Cytogenetics. (4) (4G)**

477) **BIOL 4171. Cell Physiology. (3) (3G)**

473) **BIOL 4191. Immunology. (3) (3G)**

473L) **BIOL 4191L. Immunology Laboratory. (1) (1G)**

431) **BIOL 4199. Molecular Biology. (3) (3G)**

417) **BIOL 4205. Advanced Horticulture. (3) (3G)**

319) **BIOL 4221. Plant Systematics. (4) (4G)**

**BIOL 4223. Cryptogamic Botany. (4) (4G)**

**BIOL 4229. Dendrology. (4) (4G)**

325) **BIOL 4231. Invertebrate Zoology. (4) (4G)**

321) **BIOL 4233. Vertebrate Zoology. (4) (4G)**

355) **BIOL 4243. Animal Behavior. (3) (3G)**

355L) **BIOL 4243L. Animal Behavior Laboratory. (1) (1G)**

311) **BIOL 4255. Microbiology. (3) (3G)**

311L) **BIOL 4255L. Microbiology Laboratory. (1) (1G)**

373) **BIOL 4272. Plant Physiology. (3) (3G)**

**BIOL 4272L. Plant Physiology Laboratory. (1) (1G)**

375) **BIOL 4273. Animal Physiology. (3) (3G)**

**BIOL 4273L. Animal Physiology Laboratory. (1) (1G)**

333) **BIOL 4282. Plant Growth and Development. (4) (4G)**

338) **BIOL 4283. Embryology. (3) (3G)**

338L) **BIOL 4283L. Embryology Laboratory. (1) (1G)**

347) **BIOL 4291. Histology. (4) (4G)**

345) **BIOL 4293. Comparative Vertebrate Anatomy. (4) (4G)**

**Courses for Graduate Students and Advanced Undergraduates**

593) **BIOl 5000. Advanced Topics in Biology. (1-4) (1-4G)** Prerequisite: a minimum of two area requirements in biology or consent of Department. Courses in selected topics and advanced studies in biology. Lecture and laboratory hours will vary with the topics taught. May be repeated for credit as topics vary. *(Fall, Spring)*

**BIOL 5111. Methods in Biological Electron Microscopy. (3) (3G)** Prerequisites: BIOL 4171 or 4291, two area requirements and consent of Department. A laboratory-oriented course in the methodology and applications of transmission and scanning electron microscopy. Two laboratory periods of three hours each a week and three additional laboratory hours. *(Fall)*

(562) **BIOL 5144. Advanced Ecology. (4) (4G)** Prerequisite: BIOL 4144. Energy flow, nutrient cycles, community structure, population growth and regulation. Three lecture hours and one laboratory period of three hours a week. *(Fall)*

(538) **BIOL 5189. Mechanisms in Development. (3) (3G)** Prerequisite: BIOL 4283 or CHEM 2131. Cellular and molecular bases of differentiation; an exploration of the experimental analysis of causal and controlling factors in development. Three lecture and discussion hours a week. *(Spring)*

(431L) **BIOL 5191. Gene Products Analysis. (1) (1G)** Prerequisites: BIOL 3111 and 3166, CHEM 2132 and consent of the Department. Characterization of the structure of certain proteins and its application to analysis of the encoding genetic systems. One lab period of three hours a week. *(Fall)*

**BIOL 5199. Aspects of Marine Biology. (1) (1G)** Corequisite: BIOl 5199L. Lectures and field trips providing an introduction to marine biology. Additional work required by graduate students.

**BIOL 5199L. Aspects of Marine Biology Laboratory. (2) (2G)** Prerequisite or corequisite: BIOL 5199 and consent of Department. A laboratory and field-intensive study emphasizing individualized investigations in a specialized area of marine biology. Additional work required by graduate students. May be repeated for credit.

(321) **BIOL 5231. Ornithology. (4) (4G)** Prerequisite: BIOL 4233 or 4293. Taxonomy, anatomy, physiology and life histories of the birds. Three lecture hours and one laboratory period of three hours a week.

(321) **BIOL 5233. Mammalogy. (4) (4G)** Prerequisite: BIOL 4233 or 4293. Taxonomy, anatomy, physiology and life histories of the mammals. Three lecture hours and one laboratory period of three hours a week. *(Fall)*

(457) **BIOL 5234. Wildlife Biology. (3) (3G)** Prerequisite: BIOL 4144. Concepts, principles and techniques of wildlife biology. Identification and life histories with emphasis on the value, study attraction, management, conservation and control of wildlife species. Three lecture hours a week.

(457L) **BIOL 5234L. Wildlife Biology Laboratory. (1) (1G)** Prerequisite or corequisite: BIOL 5234. One laboratory period of three hours a week plus field trips.

(455) **BIOL 5237. Animal Communication. (4) (4G)** Prerequisite: BIOL 4343 or PSYC 3110. Behavioral and structural analysis of sensory mechanisms involved in the transfer of information between individuals. Communicative strategies, analytical techniques, and sound identification of selected species. Three lecture hours and one laboratory period of three hours a week.

(557) **BIOL 5251. Pathogenic Bacteriology. (3) (3G)** Prerequisite: BIOL 4255. Cellular and molecular interactions of mammalian hosts with procaryotic parasites. Three lecture hours a week. *(Spring)*

(557L) **BIOL 5251L. Pathogenic Bacteriology Laboratory. (1) (1G)** Prerequisite: BIOL 4255L. Prerequisite or corequisite: BIOL 5251. One laboratory period of three hours a week. *(Spring)*

(572) **BIOL 5254. Marine Microbiology. (4) (4G)** Prerequisites: BIOL 4255 and 4255L. Bacteria, fungi and viruses of marine origin, and their response to the salt, temperature, pressure and nutrient environment of the ocean. Roles of marine microorganisms in public health, pollution and fouling. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

(552) **BIOL 5255. Advanced Microbiology. (4) (4G)** Prerequisites: BIOL 4255 and 4255L. A laboratory-oriented course covering such topics in general microbiology as the preparation and use of cell-free systems, isolation of auxotrophs, transport mechanisms, etc. Lectures in microbial metabolism and physiology and reading on recent developments in microbiology. Two, one-hour lectures and two, two-hour laboratory periods per week. *(Spring)*

(474) **BIOL 5259. Virology. (4) (4G)** Prerequisites: BIOL 4255, 4255L and CHEM 2132. Morphology, classification, genetics and pathogenicity of bacterial and animal viruses. Three lecture hours and one laboratory period of three hours a week. *(Fall)*

(476) **BIOL 5273. Comparative Invertebrate Physiology. (3) (3G)** Prerequisites: BIOL 4273 and CHEM 2131. Maintenance of body fluids; acquisition, processing and distribution of nutrient materials; gas exchange; movement and coordination. Three hours a week. *(Spring)*

(476L) **BIOL 5273L. Comparative Invertebrate Physiology Laboratory. (1) (1G)** Prerequisite or corequisite: BIOL 5273. One laboratory period of three hours a week. *(Spring)*

(475) **BIOL 5277. Endocrinology. (3) (3G)** Prerequisites: BIOL 4273 and CHEM 2131. Endocrine glands and their physiological roles in metabolism, growth and reproduction. Three lecture hours a week.

(475L) **BIOL 5277L. Endocrinology Laboratory. (1) (1G)** Prerequisite or corequisite: BIOL 5277. One laboratory period of three hours a week.

(577) **BIOL 5279. Neurobiology. (3) (3G)** Prerequisite: BIOL 4273. Physiology and anatomy of nervous systems, especially mammalian. Three lecture hours a week. *(Spring)*

(577L) **BIOL 5279L. Neurobiology Laboratory. (1) (1G)** Prerequisite or corequisite: BIOL 5279. One laboratory period of three hours a week. *(Spring)*

**BIOL 5291. Advances in Immunology. (3) (3G)** Prerequisite: BIOL 4191, or consent of Department. Current topics in immunology with particular emphasis upon the genetic systems and molecular mechanisms underlying immune reactions. Additional work required by graduate students. Three lecture/discussion hours a week. *(Fall)*

(352) **BIOL 5293. Vertebrate Paleontology. (3) (3G)** Prerequisite: BIOL 4293. Evolution of vertebrate animals from the first fishes to man. Three lecture hours a week.

**Courses for Graduate Students Only**

The following courses are designed to allow the student to obtain an in-depth exposure to certain areas in biology. The tutorial courses will provide a foundation for the student's research endeavor; they may be tailored to supplement the student's research endeavor or tailored to supplement the student's specialization area.

(693) **BIOL 6000. Special Topics in Biology. (1-4G)** May be repeated for credit. Prerequisite: consent of Department. Courses in selected topics and advanced studies in biology. Lecture and laboratory hours will vary with the courses taught.

(693) **BIOL 6020. Special Topics in Systematic Biology. (1-4G)** Prerequisite: consent of Department. Advanced courses in systematic and evolutionary biology. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught.

(693) **BIOL 6030. Special Topics in Genetics. (1-4G)** Prerequisite: consent of Department. Advanced courses in genetics. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught.

(693) **BIOL 6040. Special Topics in Molecular Biology. (1-4G)** Prerequisite: consent of Department. Advanced courses in biochemistry and molecular biology. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught.

(693) **BIOL 6050. Special Topics in Physiology. (1-4G)** Prerequisite: consent of Department. Advanced courses in physiology. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught.

(693) **BIOL 6060. Special Topics in Developmental Biology. (1-4G)** Prerequisite: consent of Department. Advanced courses in developmental biology and embryology. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught.

(693) **BIOL 6070. Special Topics in Anatomy. (1-4G)** Prerequisite: consent of Department. Advanced courses in anatomy and morphology. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught.

(693) **BIOL 6080. Special Topics in Behavior. (1-4G)** Prerequisite: consent of Department. Advanced courses in behavior. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught.

(693) **BIOL 6090. Special Topics in Ecology. (1-4G)** Prerequisite: consent of Department. Advanced courses in ecology. May be repeated for credit as topics vary. Lecture and laboratory hours will vary with the courses taught.

**BIOL 6191. Biometry. (4G)** Prerequisite: one course in statistics. Design and analysis of experiments. Three lecture hours and one laboratory period of three hours a week. *(Spring)*

(691) **BIOL 6600. Seminar. (1-2G)** Two hours are required. Topics of current emphasis in biology. May be repeated for credit. *(Fall, Spring)*

(695) **BIOL 6800. Tutorial. (1-4G)** Directed study in areas of specialization in biology and related fields. May be repeated for credit. Maximum credit toward degree: four hours. *(Fall, Spring)*

(697) **BIOL 6900. Research and Thesis. (1-8G)** May be repeated for credit. *(Fall, Spring)*

# Business Administration

*Degree:* M.B.A. *Coordinator:* Virginia Geurin

**MASTER OF BUSINESS ADMINISTRATION**

The primary objective of graduate study in business is to develop candidates for leadership positions in complex organizations of the future. The basic philosophy of the graduate program recognizes that managerial procedures and practices of today are subject to rapid change. For this reason, the program emphasizes a process of perceiving, analyzing, and solving administrative problems. The burden is placed on the student to determine relevant facts, evaluate alternatives, and prepare for action. Organizations are analyzed as behavioral, financial, and technological units operating in an environment with changing regional, national, and international dimensions. Candidates are encouraged to anticipate, innovate, and adjust to this dynamic environment.

The curriculum stresses the universal characteristics of management and their application in various types of organizations. Fundamental problems are examined from an economic and behavioral point of view.

Courses in economic analysis, managerial accounting and quantitative analysis focus on financial performance and resource allocation, while those in organizational behavior emphasize individual and group conduct. These areas along with courses in the functional areas of business, marketing, production, finance, and legal environment constitute the core courses in basic analysis required of all candidates.

After completing the basic analysis sequence, a student selects two additional courses from among the graduate courses offered by the College of Business Administration. This provides an opportunity for students to choose courses of particular interest to them.

The final courses in the program deal with management policy and strategic planning. These courses are designed to integrate the knowledge and skills of analysis developed in the preceding courses and to assure that the student can demonstrate application in a comprehensive manner through a study of cases, current information on company and industry applications, and a major written project.

The methods of instruction adopted in the program are designed to prepare a candidate for the realities of a management career. These methods include simulations, role playing, computer modeling of business applications, lectures, and the case study method. It is the ability to analyze, to judge trends, and to weigh diverse influences that leads to sound judgment. This capability can be developed only through practice. The methods of instruction employed in the program are designed to provide such practice.

Courses in the program are scheduled to accommodate part-time students. Classes are held in the evening throughout the year. Part-time students may enroll in two courses during the fall and spring semesters. A part-time student may complete the program in three years. Full-time students may complete the program in two years, depending upon scheduling of courses.

**Degree Requirements.** The program requires a minimum of 39 semester hours of graduate credit in approved courses.

*A. Preparation*

Candidates for the Master of Business Administration degree must present evidence of preparation in accounting, calculus, statistics, economics, and management information systems before beginning the graduate course work. Prerequisites will be determined at admission.

*B. Basic Analysis*

All candidates are required to take the following basic core courses (27 hours):

| | |
|---|---|
| MBAD 6111 | Macroeconomics and Business Forecasting |
| MBAD 6112 | Managerial Economics |
| MBAD 6122 | Quantitative Analysis of Business |
| MBAD 6131 | Managerial Accounting |
| MBAD 6141 | Production and Operations Management |
| MBAD 6152 | Financial Management |
| MBAD 6161 | Organizational Behavior I |
| MBAD 6171 | Marketing Management |
| MBAD 6181 | Legal Environment |

*C. Elective Courses*

After completing the basic analysis sequence, candidates must select two additional courses (six hours) from among the following courses:

| | |
|---|---|
| MBAD 6121 | Management Information Systems |
| MBAD 6151 | Financial Institutions and Markets |
| MBAD 6153 | Investment Management |
| MBAD 6154 | Current Topics in Financial Management |
| MBAD 6162 | Organizational Behavior II |
| MBAD 6163 | Human Resource Management |
| MBAD 6172 | Marketing Research |
| MBAD 6173 | Promotional Strategy |
| MBAD 6191 | Entrepreneurship |
| MBAD 6192 | Business and Society |
| MBAD 6890 | Directed Individual Study |

*D. Capstone Courses*

The final courses required for all candidates are:

| | |
|---|---|
| MBAD 6194 | Management Policy |
| MBAD 6196 | Strategic Planning |

## COURSE DESCRIPTIONS

### MASTER OF BUSINESS ADMINISTRATION (MBAD)

(611) **MBAD 6111. Macroeconomics and Business Forecasting. (3G)** Managerial decision making within the macroeconomic environment. Topics include managerial applications of dynamic economic forecasts at the national, regional, and industry level; the role of the monetary and financial sectors of the economy on firm planning; and the impact and opportunities of the expanding international economy on regional and national firms. *(Fall, Spring)*

(612) **MBAD 6112. Managerial Economics. (3G)** Examines the pricing system within the various market structures of the economy. Incorporates optimization procedures to facilitate the study of decision making under various market conditions facing the firm. The problems of economic concentration, resource allocation, and governmental roles in a market are studied. *(Fall, Spring)*

(621) **MBAD 6121. Management Information Systems. (3G)** Planning, design, implementation, and control of management information systems. Emphasis on the emerging utilization of more advanced information systems, the role of information management process and the networks necessary for efficient transmittal of information to the proper sources, and the generation and analysis of data for decision making. *(On demand)*

(622) **MBAD 6122. Quantitative Analysis of Business. (3G)** An analytical approach to the management process. Generalized models for decision making with major emphasis on application of the scientific method to management problems. *(Fall, Spring)*

(631) **MBAD 6131. Managerial Accounting. (3G)** Management's use of accounting. Topics include profit planning and control, evaluation of performance, cost analysis, and income tax planning. *(Fall, Spring)*

(641) **MBAD 6141. Production and Operations Management. (3G)** Use of the economic, behavioral, and quantitative disciplines to develop the ability to manage in or around the operating systems of organizations — both manufacturing and non-manufacturing. Knowledge of the best systems and an approach to problem solving are developed and applied through cases to decisions which maintain the productivity of systems yielding products or services. Included are work methods, processes, and inventory, materials, and capacity management. *(Fall, Spring)*

(651) **MBAD 6151. Financial Institutions and Markets. (3G)** Major financial institutions, particularly commercial banks, and their role in the intermediation process and as suppliers of funds to the money and capital markets. Comparative financial policies of these institutions are examined in the context of their legal and market environment. *(Yearly)*

(652) **MBAD 6152. Financial Management. (3G)** Prerequisite: MBAD 6131. Theory and practice of corporate finance including asset management, cost of capital and capital budgeting, optimization problems and socio-economic aspects of financial management. Computer technology may be employed when applicable. *(Fall, Spring)*

(653) **MBAD 6153. Investment Management. (3G)** Prerequisite: MBAD 6152. Theory and practice of investment decisions of individuals and fund managers. Topics include the status of capital market theory, the efficient market hypothesis literature, and a portfolio performance measurement. Standard institutional and investment analysis topics are covered, as well as futures and options markets and international investment topics. *(Yearly)*

**MBAD 6154. Current Topics in Financial Management. (3G)** Prerequisite: MBAD 6152. Examination of business finance topics currently being discussed in the business media and development of advanced analytical skills in those topic areas. Topics will change depending upon the business environment. The following topics form the basis of the course: lease vs. buy (borrow); leveraged buy-outs; merger analysis; international operations of American firms (capital budgeting); and capital structure decisions. *(Alternate years)*

(661) **MBAD 6161. Organizational Behavior I. (3G)** Management and organization theory and analysis of the behavior of people in organizations. Problems in motivation, leadership, interpersonal communication, group dynamics and organization structure are introduced. *(Fall, Spring)*

(662) **MBAD 6162. Organizational Behavior II. (3G)** Prerequisite: MBAD 6161. Continuation of Organizational Behavior I. Topics include performance determinants and appraisal, design of complex organizations, team building, organizational change, career development and conflict management. *(Yearly)*

**MBAD 6163. Human Resource Management. (3G)** Prerequisite: MBAD 6161. An examination of the current critical issues and strategic questions associated with managing employees. Case material, readings and audiovisual material will be used to stimulate discussion of the most important and strategic questions to be tackled by general managers today and in the future in the relationship between management and workers. *(Yearly)*

(671) **MBAD 6171. Marketing Management. (3G)** A managerial approach to strategic marketing decision making. Topics include promotional strategy, channels of distribution, demand analysis and pricing, and international marketing. Case studies, readings and simulations are used. *(Fall, Spring)*

(672) **MBAD 6172. Marketing Research. (3G)** Prerequisite: MBAD 6171. Planning, execution and evaluation of marketing research activities. Emphasis on the techniques and methodology used in the collection, analysis and interpretation of economic, demographic and sociological data for use in marketing decision making. *(On demand)*

(673) **MBAD 6173. Promotional Strategy. (3G)** Prerequisite: MBAD 6171. Opportunities and challenges for an organization through advertising, personal selling, sales promotion and publicity. It includes analysis of the legal and ethical problems involved in this area. Case studies and a project assignment are used. *(Yearly)*

(681) **MBAD 6181. Legal Environment. (3G)** An intensive study of the common and statutory law which is applicable in a business decision-making context. Emphasis placed upon federal regulatory law and the role and functioning of the federal regulatory agencies in supervising the scope of permissible business activities. *(Fall, Spring)*

**MBAD 6191. Entrepreneurship. (3G)** Prerequisites: MBAD 6131, 6152, 6171, or permission of the MBA coordinator and the instructor. An examination of entrepreneurship and entrepreneurs. Focus on planning the start-up of a fast-growth enterprise with the aim of rewarding the founders and initial investors with significant capital gains. Extensive use of case studies will provide a background of classroom activities to assist students in the preparation of a detailed plan for the hypothetical start-up of a fast-growth firm. *(Alternate years)*

(692) **MBAD 6192. Business and Society. (3G)** Ethical, moral, political and social aspects of policy formulation and implementation. Management's responsibilities to consumers, employees, investor/owners, and society are stressed. Case studies are used. *(Yearly)*

(694) **MBAD 6194. Management Policy. (3G)** Examination of the need to integrate the functional activities of the firm in planning corporate objectives and achieving operating results. Emphasis on ability to identify issues and problems of the firm as a whole, to explore alternatives and to make decisions which recognize the interrelationships of the functional specialties within the total organization. Application and integration of knowledge and skills of analysis developed in the preceding courses of the MBA program. *(Fall, Spring)*

(696) **MBAD 6196. Strategic Planning. (3G)** Prerequisite: MBAD 6194. Emphasis on functioning of the firm or organization as a whole within a rapidly changing environment including changing industry conditions, as well as technological, social, political and economic changes. Plans, strategies and implementation policies must be developed if the firm is to continue. Strategic planning techniques being developed by researchers and by corporate practitioners are studied. A major objective of the course is to assure that the student completing the professional MBA program can demonstrate application in a comprehensive manner. This is done through a study of cases, current information on company and industry applications, and through a major written project. *(Fall, Spring)*

(690) **MBAD 6890. Directed Individual Study. (3-6G)** Directed individual study and in-depth analysis of a special area of management, economics, business or accounting. The course may be used to satisfy up to six semester hours of graduate credit requirements in the Master of Business Administration degree program and may be repeated for credit provided a different area of study is undertaken each time. Permission of a member of the graduate faculty who would direct the study and permission of the MBA program coordinator must be secured before registering for the course. *(Fall, Spring)*

# Chemistry

*Degree:* M.S. *Coordinator:* Paul Rillema

## MASTER OF SCIENCE DEGREE IN CHEMISTRY

The program leading to the Master of Science degree in chemistry is a research-based program, requiring courses of a broad, general nature. Major emphasis is placed upon the research project and required thesis.

**Degree Requirements.** The candidate for the degree must present a minimum of 30 semester hours of which at least 15 semester hours must be 6000-level courses open to graduate students only. The remaining credit may be earned by taking courses approved for graduate credit. Required courses include CHEM 4111, 4121, 4131, 6682 and 6900. Two semester hours of graduate seminar, CHEM 6282, and at least one, but up to 16 semester hours of research and thesis credit, CHEM 6900, must be presented. In addition, six semester hours from the course group CHEM 6115, 6125, 6135, 6145, 6146 or 6060 are required. Departmental approval is necessary before CHEM 6060 credit can be used to satisfy this requirement. Any 4000 level or higher mathematics or physics course except those designed for a professional education sequence may be taken for graduate credit. Well-prepared students, particularly those with degrees from ACS-approved programs will normally achieve CHEM 4111, 4121, and 4131 through placement examinations administered after admission. In those cases, CHEM 4111, 4121 and 4131 hours may be replaced by research, CHEM 6900, or by elective courses. A grade point average of 3.0 ($A = 4.0$) is required for the degree. In addition, the following specific requirements must be fulfilled:

1. Satisfactory performance on a reading examination in the chemical literature in Russian, German or French. This requirement will be waived with the presentation of passing grades for the first two college years (four semesters or their equivalent) of one of the three acceptable languages. As an alternative to the language requirement, the student may offer proficiency in computer language. Decisions as to the acceptability of the level of computer proficiency will be made by the Chemistry Department.

2. Acceptance of the thesis within six calendar years after admission into the M.S. program as a degree student. This includes a successful defense of the written thesis before a special thesis committee established by the Chemistry Department. The thesis committee shall consist of no fewer than four persons, at least one of whom must be from a department other than Chemistry.

Approval of the program of each student and monitoring his/her progress toward the degree shall be the responsibility of the student's research adviser. Prior to the selection of a research adviser, graduate student progress is monitored by the departmental Graduate Committee.

**Continued Enrollment.** A student in the chemistry M.S. program is required to maintain satisfactory progress toward the degree. Continued enrollment is at all times subject to review on the basis of academic record. This review is performed by the departmental Graduate Committee.

## COURSE DESCRIPTIONS

### CHEMISTRY (CHEM)

Following are courses designed primarily for advanced undergraduates which are available for graduate credit. See page 109 for complete course descriptions.

(375) **CHEM 3175. Introductory Biochemistry. (3) (3G)** (Not available for graduate credit to students in the Chemistry Department.)

(375L) **CHEM 3175L. Introductory Biochemistry Laboratory. (1) (1G)** (Not available for graduate credit to students in the Chemistry Department.)

(411) **CHEM 4111. Instrumental Analysis. (4) (4G)**

(412) **CHEM 4112. Applied Microcomputer Interfacing in Chemistry. (4) (4G)**

(421) **CHEM 4121. Advanced Inorganic Chemistry. (4) (4G)**

(431) **CHEM 4131. Advanced Organic Chemistry. (4) (4G)**

(445) **CHEM 4145. Advanced Physical Chemistry. (3) (3G)**

(475) **CHEM 4175. Physical Biochemistry. (3) (3G)**

(495) **CHEM 4695. Chemistry Seminar. (1) (1G)**

(490) **CHEM 4900. Independent Study and Research. (1-4) (1-4G)**

**Courses for Graduate Students and Advanced Undergraduates**

(590) **CHEM 5090. Special Topics in Chemistry. (1-4) (1-4G)** Prerequisite: consent of the Department. Selected topics in chemistry. Lecture and/or laboratory hours will vary with the nature of the course taught. May be repeated for credit.

**Courses for Graduate Students Only**

(600) **CHEM 6060. Special Topics and Investigations. (Variable credit, up to 3G)** Prerequisite: consent of Department. Directed study of topics of current chemical interest. May be repeated for credit. *(On demand)*

(615) **CHEM 6115. Advanced Analytical Chemistry. (3G)** Prerequisite: CHEM 4111. The application of modern analytical methods to chemical problems. Emphasis is upon the chemical information, particularly structural, obtainable from these techniques. Three lecture hours per week. *(On demand)*

(625) **CHEM 6125. Theoretical Inorganic Chemistry. (3G)** Prerequisite: CHEM 4121. Group theoretical treatment of current theories of inorganic chemistry. Topics covered: Ligand field theory, molecular orbital theory for complex ions, electronic spectra of complex ions and the magnetic properties of complex ions. Three lecture hours per week. *(On demand)*

(635) **CHEM 6135. Advanced Organic Chemistry. (3G)** Prerequisite: CHEM 4131. A qualitative discussion of modern mechanistic interpretation of the relations between structure and reactivity. Special emphasis is placed on the role of reactive intermediates such as carbonium ions, carbanions, carbenes and radicals. Three lecture hours per week. *(On demand)*

(645) **CHEM 6145. Chemical Thermodynamics. (3G)** Prerequisite: CHEM 3142. The postulatory basis of classical thermodynamics. Problems in chemical thermodynamics. The use of statistical mechanics for calculating thermodynamic functions. Three lecture hours per week. *(On demand)*

(646) **CHEM 6146. Rates and Mechanisms. (3G)** Prerequisite: CHEM 3142. Consideration of chemical kinetics and mechanism schemes, particularly those of current interest. Three lecture hours per week. *(On demand)*

(650) **CHEM 6150. Seminar-Internship. (Variable credit, up to 3G)** Prerequisite: consent of Department. Required for all teaching assistants. Opportunities for supervised experience in the teaching of college chemistry will be offered. Graded *Pass/No Credit*. May be repeated for credit. *(Fall, Spring)*

(680P) **CHEM 6681. Research Seminar. (1G)** Discussion of recent developments and special topics in chemistry. Graded *Pass/No Credit. (Fall, Spring)*

(680) **CHEM 6682. Research Seminar. (1G)** Individual investigation and exposition of the results. May be repeated for credit. *(Fall, Spring)*

(690) **CHEM 6900. Research and Thesis. (Variable credit, up to 16G)** Laboratory research for the thesis. *(Fall, Spring, Summer)*

# Computer Science

*Degree:* M.S.. *Coordinator:* Joseph Schell

**MASTER OF SCIENCE DEGREE IN COMPUTER SCIENCE**

The object of the computer science program leading to the Master of Science degree is to provide advanced skills and knowledge in the planning, design, implementation, testing, and management of computer systems. These skills are necessary for dealing with the problems encountered in business, industry, and governmental computer applications; for holding administrative or engineering positions requiring the planning and implementation of computer systems; for teaching computer science; and/or for further study in computer science, in particular, for doctoral study.

The primary areas of interest are artificial intelligence and its applications, computer engineering, database design and implementation, operating systems, and theoretical computer science.

**Degree Requirements.** Candidates for the Master of Science degree in Computer Science have the option of:

(a) completing 30 semester hours of course work, writing an expository essay, and passing a comprehensive examination, or

(b) completing 24 hours of course work, writing a thesis for six hours of credit, and passing a comprehensive examination.

Either option can be completed on a full-time or part-time basis.

All students are required to complete or have the equivalent of CSCI 5102, 5112, 5141, 6114 and 6160—a total of 15 semester hours. Each student will select with his/her adviser 9 to 15 semester hours of additional course work to meet program requirements/career goals.

With the graduate adviser's approval, students with an emphasis in computer engineering may substitute two computer engineering courses for two of the five required computer science courses.

A maximum of six semester hours of graduate credit may be transferred from other institutions.

## COURSE DESCRIPTIONS

### COMPUTER SCIENCE (CSCI)

**Courses for Advanced Undergraduates and Graduate Students**

**CSCI 40XX. Topics in Computer Science. (3) (3G)** *(On demand)*

**Courses for Graduate Students and Advanced Undergraduates**

**CSCI 50xx. Topics in Computer Science. (3) (3G)** *(On demand)*

**CSCI 5102. Survey of Programming Languages. (3) (3G)** Prerequisite: consent of the Department. Study of the concepts underlying various computer languages and comparing and evaluating various language features. History and development of various languages, such as FORTRAN, ALGOL, COBOL, PL/I, PASCAL, Modula-2, Ada,...; evaluation and camparison of various algorithms and language suitability. Selection of languages for problems/environments. Introduction of other languages, such as SNOBOL, LISP. *(Fall) (Evenings)*

**CSCI 5110. Programming Languages and Compilers. (3) (3G)** Prerequisite: CSCI 5141 or consent of Department. Introduction to the concepts and techniques used in describing, defining, and implementing programming languages and their compilers. Introduction to parsing and parser construction; LL and LR grammars; syntax directed translation; data object representations; run time structures; intermediate languages; code optimization. *(Alternate years)*

**CSCI 5111. Advanced Topics in Programming Languages and Compilers. (3) (3G)** A continuation of material in CSCI 5110 with emphasis on advanced aspects of optimization, data flow analysis, and error discovery. *(On demand)*

**CSCI 5112. Software System Design and Implementation. (3) (3G)** Prerequisite: CSCI 5141 or consent of Department. Introduction to the techniques involved in the planning and implementation of large software systems. Emphasis on human interface aspects of system. Planning software projects; software design process; top-down design; modular and structured design; management of software projects; testing of software; software documentation; choosing a language for software system. *(Spring) (Evenings)*

**CSCI 5130. Computer Graphics—Design of Interactive Systems. (3) (3G)** Prerequisite: CSCI 5141 or consent of Department. Introduction to design and implementation of computer graphics with emphasis on interactive systems. Output devices/plotters, microfilm, CRT tubes; input devices/digitizers, joy sticks, keyboards, light pens; display of information/graphs, flow charts, histograms; transformations, and translations; projections; special features/blinking, highlighting, reverse video, protected fields. *(On demand)*

(431) **CSCI 5131. Simulation. (3) (3G)** Prerequisites: CSCI 1100P (or equivalent) and MATH 3122, or consent of Department. Emphasis on the design and derivation of mathematical models of dynamic systems; deterministic simulation; random events; non-deterministic simulation; discrete simulation; comparison and optimization. *(On demand)*

(541) **CSCI 5141. Computer Organization and Architecture. (3) (3G)** Prerequisite: consent of Department. Introduction to the concepts of computer system design at the register level. Number systems; fetch-execute cycle; data and instruction formats; 0, 1, 2, 3 address machines; addressing modes; functional components; I/O; interrupts; cycle stealing; assembler macros; linking and loading. *(Fall, Spring) (Evenings)*

**CSCI 5150. Artificial Intelligence. (3) (3G)** Prerequisites: CSCI 2175 and 2161, or consent of Department. To introduce core ideas in AI. Heuristic versus algorithmic methods; problem solving; game playing and decision making; automatic theorem proving; pattern recognition; adaptive learning; projects to illustrate theoretical concepts. *(Fall)*

**CSCI 5156. Computer-Aided Instruction. (3) (3G)** Prerequisite: consent of the Department. History of CAI; study of current CAI systems; development of man-machine dialogue; programming tools for CAI; information structures for computer-oriented learning. Advantages/disadvantages/costs of CAI. *(On demand)*

**CSCI 5170. Formal Languages and Automata. (3) (3G)** Prerequisites: one semester of discrete structures or consent of the Department. Detailed study of abstract models for the syntax of programming languages and information processing devices. Languages and their representation; grammars; finite automata and regular sets; context-free grammars and pushdown automata; Chomsky Hierarchy; closure properties of families of languages; syntax analysis. *(Spring)*

**CSCI 5171. Logic Programming. (3) (3G)** Prerequisite: CSCI 2175 or consent of the Department. Prolog programming language; programming techniques in Prolog; foundations of logic programming including computability of Horn clause logic, completeness of resolution principle, complexity of unification algorithms, and verification of logic programs; principles of implementing logic programming systems; selected topics from applications of logic programming to expert systems, intelligent data base systems, and/or natural language processing. *(On demand)*

**CSCI 5175. Computability and Complexity. (3) (3G)** Prerequisite: consent of the Department. Study of computability, unsolvability, and computational complexity. Concept of effective computability; recursive functions; mathematical models of computation; universal Turing machines; unsolvable problems; time and space complexity of computations; NP-completeness problems; subrecursive hierarchies. *(On demand)*

**Courses for Graduate Students Only**

**CSCI 60XX. Topics in Computer Science. (3G)** Prerequisite: consent of Department. Exposure to current research and literature. Detailed exploration of main theme or a collection of related topics which may vary from term to term. *(On demand)*

**CSCI 605X. Advanced Topics in Artificial Intelligence. (3G)** Prerequisite: CSCI 5150 or consent of the Department. A selected topic in artificial intelligence, such as machine learning, computer vision, heuristic search, natural language processing. (May be repeated for credit as topics vary and with the approval of the Department.) *(On demand)*

**CSCI 6104. Programming Environments, Benchmarks, Standards. (3G)** Prerequisites: CSCI 5141 or consent of the Department. An introduction to the concepts in evaluating programming environments, establishing benchmarks, and constructing and using standards. A study of various programming environments, including languages, modes of operation and support equipment. The process of constructing benchmarks for evaluation of software and hardware. Also the selection and use of standards for various computer-related processes. *(On demand)*

**CSCI 6106. Computer Systems-Selection and Operation. (3G)** Prerequisite: CSCI 5141 or consent of the Department. An introduction to the selection and operation of a computer system from a performance point of view. Determining and constructing the specifications for acquisition of a computer system; evaluation of bidder responses; benchmarking computer systems; selecting and contracting for a computer system; tuning a system to an installation's environment. *(On demand)*

**CSCI 6114. Advanced Programming Techniques and Data Structures. (3G)** Prerequisite: CSCI 5141 or consent of Department. Introduction to techniques and structures used and useful in design of sophisticated software systems. Records; arrays; linked list structures; trees; graphs; storage management and garbage collection; searching and sorting; interprogram communication; recursion; reentrancy; and co-routines; parameter passing; naming conventions; stacks. *(Fall) (Evenings)*

**CSCI 6115. Advanced Topics in Programming Techniques and Data Structures. (3G)** Prerequisite: CSCI 6114. Continuation and extension of CSCI 6114. File organizations and optimization; storage management; hashing; string representations; language considerations. *(On demand)*

**CSCI 6132. Computer Modeling and Simulation. (3G)** Prerequisites: CSCI 5131 and consent of Department. Introduction to modeling of complex systems. Emphasis on modeling of computer systems and configurations. *(On demand)*

**CSCI 6144. Operating Systems Design. (3G)** Prerequisite: CSCI 6114 or consent of Department. Introduction to features of a large-scale operating system with emphasis on resource-sharing environments. Computer system organization; resource management; multiprogramming; multi-processing; file systems; virtual machine concepts; protection and efficiency. *(Alternate years)*

**CSCI 6155. Knowledge-Based Systems. (3G)** Prerequisite: CSCI 5150. Knowledge representation; automatic deduction; techniques for handling uncertainty and inexact knowledge; principles of rule-based systems and frame-based systems. Selected study of actual knowledge-based systems and knowledge engineering tools. A course project of building a knowledge-based system. *(On demand)*

**CSCI 6160. Data Base Systems, Design and Management. (3G)** Prerequisite: CSCI 6114 or consent of the Department. Introduction to principles of data base design, and survey of alternative data base organizations and structures. Logical data base organization; schemas; subschemas; data description languages; hierarchical, network, and relational data bases; data base management systems; normal forms. *(Spring) (Evenings)*

**CSCI 6161. Advanced Topics in Data Base Systems, Design and Management. (3G)** Prerequisite: CSCI 6160. Continuation of CSCI 6160. Topics include addressing techniques; physical structures; searching; compaction technique; storage hierarchies; multiple-key retrieval; efficiency and security considerations. *(On demand)*

**CSCI 6164. Design and Implementation of Online Management Information Systems. (3G)** Prerequisites: CSCI 6114 or consent of the Department. The fundamental concepts and philosophy of planning and implementing an on-line computer system. Characteristics of on-line systems; hardware requirements; modeling of on-line systems; performance measurement; language choice for on-line systems; organization techniques, security requirements; resource allocation. *(On demand)*

**CSCI 6166. Computer Communications and Networks. (3G)** Prerequisite: CSCI 6114 or consent of the Department. Introduction to the concepts of computer networks; their operating systems; and communication between nodes. Types of networks; communications and protocols; routing; message switching; optimization; distributed processing; coding and compaction. *(Alternate years)*

**CSCI 6690. Computer Science Seminar. (3G)** Prerequisite: at least six graduate CSCI/CPGR courses and consent of Department. Experience for the advanced M.S. student on current problems of computer design and application. (May be used by a student or small group of students to work with a professor on a topics of mutual interest. May be used to give a course on a topic announced in advance.) *(On demand)*

**CSCI 6998. Computer Science Thesis I. (3G)** Prerequisites: at least 21 hours graduate CSCI/CPGR credit and consent of Department. Thesis research work for graduate students. Detailed exploration of an area of computer science chosen for thesis research. *(On demand)*

**CSCI 6999. Computer Science Thesis II. (3G)** Prerequisite: CSCI 6998. Continuation of graduate thesis research work. Detailed exploration of an area of computer science chosen for thesis research. *(On demand)*

## COMPUTER SCIENCE/ENGINEERING (CPGR)

**CPGR 4181. Microcomputer Interfacing. (3) (3G)** Prerequisite: EEGR 2112, CSCI 2140, or permission of the Department. Signal conditioning; A/D conversion; noise; transmission line effects; signal processing; D/A conversion; and serial/parallel interfaces. *(On demand)*

**CPGR 5182. Computer Arithmetic. (3) (3G)** Prerequisite: permision of the Department. Principles, architecture, and design of fast two operand adders; multioperand adders, standard multipliers, and dividers. Cellular array multipliers and dividers. Floating point processes, BCD, and excess three adders, multipliers, and dividers. *(On demand)*

**CPGR 6146. Microprogramming—Theory and Applications. (3G)** Prerequisite: CSCI 5141 or consent of the Department. Registers; buses; gates; target/host machines; micro instruction architecture; horizontal vs. vertical organizations; microprograms; advantages vs. disadvantages of microprogramming; examples of microprogrammable systems. *(On demand)*

**CPGR 6181. Switching and Automata Theory. (3G)** (Formerly EAD 681/EE 6181) Prerequisite: consent of the Department. Topics include sets, relations, lattices, Boolean algebras; functional decomposition and symmetric functions; threshold logic; multiple-valued logic; fault detection and fault tolerant design; finite state machines, incompletely specified machines, minimization; state identification and fault detection experiments; finite state recognizers. *(On demand)*

**CPGR 6182. Advanced Computer Architecture. (3G)** Prerequisite: CSCI 5141 or consent of the Department. Topics include survey of existing and proposed architectures; pipelined, dataflow, restructurable, and supercomputer architectures. Multicomputer architectures; interconnection; communication; fault tolerance; synchronization; and utilization of resources. Multiprocessor architecture; interconnection schemes; performance evaluation; processor memory interconnection; task allocation; and load balancing. Impact of VLSI on architecture. *(On demand)*

# Criminal Justice

*Degree:* M.S. *Coordinator:* Ronald E. Vogel

**MASTER OF SCIENCE DEGREE IN CRIMINAL JUSTICE**

The Criminal Justice program leading to the Master of Science degree provides graduate preparation and enhancement for careers in criminal justice agencies. The program is interdisciplinary in nature and utilizes social and behavioral sciences perspectives to study law, crime and social deviance and to examine critically the systems that have evolved in response to these problems. The objectives of the master's program are: (1) to provide present and future criminal justice personnel with the educational background needed to function effectively in the ever-changing criminal justice system; (2) to familiarize students with the nature, functions and methods of research as well as with the existing body of research on criminal justice problems; (3) to provide the criminal justice system with qualified candidates for careers in administration, law enforcement, planning and analysis, juvenile justice corrections, and teaching in community colleges; and (4) to prepare students for advanced graduate work.

Students may enroll in the Master of Science program on either a full-time or part-time basis. Classes are scheduled in the evening to accommodate the part-time student.

**Degree Requirements.** A total of 36 semester hours is required, including 18 semester hours in courses open only to graduate students. All students must complete four core courses: CJUS 6100-The Criminal Justice System; CJUS 6101-The Nature and Theory of Crime; CJUS-6102 Research in Criminal Justice; and CJUS 6104-Criminal Justice and Social Control. These courses should be taken at the beginning of the program. Other requirements include: a graduate-level course in statistics or social measurement and a concentration of 12 semester hours in Law Enforcement, Corrections or Criminal Justice Management including at least one graduate course from a discipline other than criminal justice. Students select the option of (1) passing a comprehensive written examination after completion of all course work, or (2) completing a thesis as part of the 36-hour degree requirement. At least 30 semester hours must be taken in residence. Transfer courses will be accepted at the discretion of the Department and must be consistent with the student's overall program.

**Program Approval and Continued Enrollment.** Each student shall select a major professor during the first semester of enrollment. The major professor must be a faculty member in the Department of Criminal Justice and shall serve as chairperson of the student's Academic Committee. Each student shall select an Academic Committee, which will be composed of at least two and no more than three faculty members, prior to the completion of 18 semester hours of course work. The academic committee will be responsible for the approval of the student's curriculum. Each student must satisfy University requirements for continued enrollment of graduate students.

**Admission to Candidacy.** General academic regulations will apply to application for admission to candidacy. Any identifiable entrance deficiencies must be removed by the time of application. In addition, after completion of the core requirements (CJUS 6100, 6101, 6102 and 6104) all students must successfully complete a qualifying examination administered by the student's Academic Committee.

## COURSE DESCRIPTIONS

### CRIMINAL JUSTICE (CJUS)

**Courses for Advanced Undergraduates and Graduate Students***

(499) **CJUS 4000. Topics in Criminal Justice. (1-6G)**

(459) **CJUS 4200. Problems and Decisions in Criminal Justice. (3) (3G)**

**Courses for Graduate Students and Advanced Undergraduates**

(621) **CJUS 5103. Program Planning and Evaluation in Criminal Justice. (3) (3G)** Prerequisite: junior standing and consent of the Department. Applied research will be viewed as the foundation for criminal justice planning; distinctions between basic and applied research will be emphasized. Emphasis will be placed on the theoretical bases of planning in general and criminal justice planning in particular. The role of evaluation as it relates to criminal justice programs will be discussed to assist the student in predicting the success or failure of a project or program. *(Alternate years)*

(651) **CJUS 5131. Police Problems and Practices. (3) (3G)** Prerequisite: junior standing and consent of the Department. Consideration will be given the role and function of police on the operational level. Discretionary decision-making and the legal, social and institutional contexts in which it occurs are also considered. Application of interpersonal and intrapersonal theories and concepts to police problems and practices will be included. *(Alternate years)*

**Courses for Graduate Students Only**

(690) **CJUS 6000. Topics in Criminal Justice. (3-6G)** Special issues; may be repeated for credit. *(Alternate years)*

(600) **CJUS 6100. The Criminal Justice System. (3G)** Major subsystems of the criminal justice system will be examined. These include law enforcement, criminal courts and correctional agencies, as well as the juvenile offender subsystem. The linkage of these subsystems to each other and to the community and society at large will be discussed. *(Fall)*

(610) **CJUS 6101. The Nature and Theory of Crime. (3G)** Definitions and patterns of criminal behavior will be examined. Major theoretical perspectives on crime, including historical, philosophical, individual, community-oriented and societal approaches will be considered. *(Fall)*

(620) **CJUS 6102. Research in Criminal Justice. (3G)** Research methodology and statistics will be considered with an emphasis on applications to criminal justice settings. *(Spring)*

(630) **CJUS 6104. Criminal Justice and Social Control. (3G)** Ethical issues of social control and criminal justice responses to such issues will be considered. The course will examine and critique the assumptions underlying systems of social control, especially as they relate to the application of criminal sanctions; such issues as drug addiction and alcoholism will be included in the examination. *(Spring)*

(640) **CJUS 6120. Criminal Justice Management and Decision-Making. (3G)** The application of generic principles of management and supervision to operational problems confronted by criminal justice agencies will be discussed. Particular attention will be devoted to decision-making and discretion in a criminal justice setting. *(Fall)*

(650) **CJUS 6130. Law Enforcement Systems. (3G)** Consideration of the elements of law enforcement agencies as subsystems of the total criminal justice system. Attention will be given to the relationship between the law enforcement subsystems and the community. *(Alternate years)*

(655) **CJUS 6132. Legal Issues in Law Enforcement. (3G)** Advanced consideration of law applicable to the functions of the police administrator and the line police officer will be considered. Attention is given to major issues in constitutional, statutory, court-made and administrative law governing search and seizure, arrest, interrogation, use of force, jurisdiction, civil and criminal liability of administrators and officers, rights of officers and rights of suspects. *(Fall)*

(660) **CJUS 6140. Prosecution and Adjudication Processes. (3G)** This course will examine the functions and powers of prosecutors, defense attorneys, judges and juries and will include a discussion of plea bargaining and court procedure. *(Alternate years)*

*See page 116 for complete course descriptions.

(670) **CJUS 6150. Corrections. (3G)** The focus of this course will be on the function of correctional agencies. Principles of punishment and a historical analysis of correctional institutions and programs will be presented. Prisons, jails, probation and parole systems will be discussed. *(Alternate years)*

(671) **CJUS 6151. Correctional Strategies: Rehabilitation and Reintegration. (3G)** Efforts to change offender behavior and to facilitate the development of offender-community linkages will be discussed. Institutional classification and treatment strategies, pre-release and temporary release programs, innovative uses of probation and parole services, community residential programs and new dispositional models; e.g., sentencing to community service and restitution, will be examined. *(Alternate years)*

(675) **CJUS 6152. Legal Issues in Corrections. (3G)** Consideration of major legal issues pertaining to corrections, including sentencing, probation, restitution, prisons, parole, pardon and restoration of rights will be discussed. Emphasis will be given to legal issues often confronted by correctional administrators and probation and parole personnel. *(Alternate years)*

(680) **CJUS 6160. Juvenile Justice Systems. (3G)** The process by which specific behaviors are identified as delinquent and the responses of the juvenile justice system to such behaviors will be analyzed. Laws dealing with the juvenile justice system, the historical development of the system and the effectiveness of innovative responses to delinquency will be considered. *(Alternate years)*

(691) **CJUS 6800. Directed Individual Study in Criminal Justice. (3G)** Supervised investigation of criminal justice problem of special interest to the student. May be repeated one time with the approval of the student's major professor or academic committee. *(Fall, Spring)*

(692) **CJUS 6900. Thesis. (6G)** Independent research on a significant criminal justice topic approved by the student's academic committee. *(Fall, Spring)*

# Education

The College of Education and Allied Professions offers graduate degree and certificate programs in Counseling and Guidance, Curriculum and Instruction, Educational Administration, and Health Education.

The **Master of Education** degree is designed to provide sound programs of graduate professional study for advanced certification which are built upon a body of knowledge and experience common to several types of professional needs and expertise. Graduates of these programs will be able to employ expertise in a variety of ways: (a) as teachers in the primary grades, intermediate grades, middle grades, secondary grades, special education, reading, English as a second language, and health education; (b) as administrators and support personnel in the areas of administration and supervision, curriculum and instruction, and school counseling; and (c) as students in programs for advanced study and doctoral programs. Courses appropriate for teacher certification renewal, additional graduate certification fields, or special needs for individual professional growth also are available.

The **Master of Human Development and Learning** degree is designed to provide graduate professional study leading to an advanced degree in Agency Counseling. Graduates of this program will be able to employ their expertise in a variety of settings including mental health and other community agencies.

**Certificate of Advanced Study (Sixth-Year) Programs.** Beyond the master's level, the College offers Certificate of Advanced Study programs in the following areas: Counseling and Guidance; Elementary Education (Early Childhood and Intermediate); School Administration; Secondary Education (English, Mathematics and History); Curriculum and Instruction Specialists (Supervision); and Special Education. These programs are planned to meet the guidelines of the North Carolina State Board of Education and persons who successfully complete a program will be granted a Level II Graduate Certificate in their field of study.

**Doctoral Studies.** The College collaborates with The University of North Carolina at Chapel Hill to offer the Doctor of Education in Educational Administration. The degree is conferred by The University of North Carolina at Chapel Hill.

## TEACHER CERTIFICATION

**Post-Baccalaureate.** Special students who have already completed a baccalaureate degree may be admitted to The University for teacher certification purposes. Specific courses and activities necessary for certification will be determined upon an evaluation of the person's credentials by the Dean's Office, College of Education and Allied Professions. This evaluation will take into account the student's prior preparation in accordance with the guidelines of The University's approved program in teacher education. A plan of study leading to certification will be developed with the student and a copy of the approved plan filed with the State Department of Public Instruction.

**Graduate and Advanced Graduate.** North Carolina provides graduate certification and the Certificate of Advanced Study for satisfactory completion of approved master's and sixth-year programs. The graduate certification may be of the same type or field received at the completion of a baccalaureate degree program or it may be in a special service personnel area such as Administration, Supervision, Counseling and Guidance, Reading, or Special Education. Students electing graduate certification in Early Childhood Education, Intermediate Education, Middle Grades Education and the special service personnel areas major in Education and pursue a Master of Education degree program. Students who select Secondary certification areas generally will major in Education but may elect to major in a graduate program within the College of Arts and Sciences in disciplines specific to the certification sought.

Certificate of Advanced Study certification is based upon the completion of approved programs of study beyond the master's degree. The Certificate of Advanced Study may be in a teaching field or one of the special service personnel areas. At UNCC, students electing the CAS programs are admitted and enrolled in the College of Education and Allied Professions. Formal coordination is maintained with other appropriate departments and colleges which provide course work needed in many of the CAS programs.

# Counseling and Guidance

*Degrees:* M.H.D.L. (Agency Counseling)
M.Ed. (School Counseling)
CAS (School Counseling)

*Coordinator:* Robert L. Barret

The Counseling and Guidance Program is administered by the Department of Human Services within the College of Education and Allied Professions.

The Counseling and Guidance Program offers course work at the graduate level leading to the Master of Human Development and Learning degree (MHDL) in agency counseling, and the Master of Education degree (M.Ed.) and the Certificate of Advanced Study (CAS) in school counseling. The counseling program prepares counselors for a variety of work settings including elementary and secondary schools, vocational-technical schools, community agencies, the correctional system and other environments in which the helping relationship can be utilized. Graduates of this program are prepared to:

1. Work individually and in groups with clients on educational, vocational, social, emotional and/or physical concerns.
2. Consult with other professionals concerning the clients' needs.
3. Provide information and understanding to clients in the areas of educational, social and/or vocational planning.
4. Conduct and facilitate local research efforts.

Specific knowledge and skills appropriate to master's or advanced certificate levels will be developed.

## MASTER'S DEGREE PROGRAMS AND REQUIREMENTS

**MHDL and M.Ed. Degrees with a Concentration in Counseling and Guidance.** Programs are developed in two tracks, School Counseling and Agency Counseling. The 42-hour program typically consists of the following courses: Core Requirements (9-12)—EDUC 6100, 6101, 6120 and EDUC 6109 or PSYC 4140; Skill Development (18 hours)—CSLG 6100, 6110, 6120, 6430 and 6435; and Specialization (12-15 hours). Six hours are recommended to be taken outside the College.

Course work should be planned with the adviser so that it is consistent with the student's professional goals as well as programmatic guidelines.

Students in the School Counseling Track who complete requirements for Graduate Certification in Counseling and Guidance receive the Master of Education degree.

All students must successfully complete either a written comprehensive exam or a master's project as a requirement for graduation. While these would be completed at or near the end of the student's program of study, the student should consult with the adviser within the first 12 hours of course work concerning procedures and preparation for either option.

## CERTIFICATE OF ADVANCED STUDY

The Certificate of Advanced Study is a program for the post-master's student seeking to further his/her skills in counseling and guidance. Students are expected to continue to refine their skills in delivering counseling services as well as to develop competencies in the administration of counseling programs and in supervising other helping professionals.

The Certificate of Advanced Study requires 30 hours beyond the master's degree. A typical program would consist of the following: Required Courses (15 hours): ADMS 7250, EDUC 6110, CSLG 7801, 7120, 7400 and 7110; and electives (12 hours): Electives will be selected in consultation with the adviser. These electives may include courses offered for graduate credit within the College or in other departments.

**Residence Requirement.** All course work for the Certificate of Advanced Study Programs must carry UNCC residence credit. Six semester hours of approved course work may be accepted for

transfer credit from another accredited institution. Of the course work carrying UNCC residence credit nine semester hours must be earned through registration and completion of these courses on the UNCC campus by one of the following means:

1. Registration for nine semester hours of credit during one semester or two summer sessions. This would be considered full-time work on the campus.
2. Registration for nine semester hours of credit during two consecutive semesters during an academic year. A spring semester of one academic year combined with the fall semester of the following academic year would also meet this requirement.
3. Registration for nine semester hours of credit during a semester and consecutive summer term or a summer term and consecutive semester. Either of the summer terms could be used to meet this requirement.
4. Should unusual or extenuating circumstances prevent a student from meeting the on-campus requirement, the student may appeal in writing to the Student Personnel Committee. The Student Personnel Committee would consider the appeal and render a decision.

## COURSE DESCRIPTIONS

### COUNSELING (CSLG)

**Courses for Graduate Students and Advanced Undergraduates**

(556) **CSLG 5100. Counseling Needs of Women. (3) (3G)** Topics include women's development and needs, the problems they bring to counselors, strategies for helping with them, myths about women and biases in psychological research. *(Spring) (Alternate years)*

**Courses for Graduate Students Only**

(673) **CSLG 6000. Selected Topics in Counseling. (3G)** Prerequisite: permission of Department of Human Services. Examination of selected areas of interest in the counseling professions. May be repeated for credit with departmental approval as topics vary. *(Fall, Spring, Summer)*

(615) **CSLG 6100. Counseling Theory. (G)** Examination of the counseling relationship from various theoretical frameworks, including client-centered, Gestalt, psychoanalytic, transactional analysis, rational emotive, reality, and behavior theories. *(Fall, Spring, Summer)*

(621E) **CSLG 6109. Research in Counseling. (3G)** Examination of principles and practices for research and development of programs in counseling with emphasis on developmental designs, preventive programs, objectives and organizations. *(On demand)*

(640) **CSLG 6110. Counseling Techniques. (3G)** Examination of concepts of individual counseling and the means for establishing facilitative relationships including competence in basic counseling skills and interventions. *(Fall, Spring, Summer)*

(665A) **CSLG 6115. Person to Person Relationships. (3G)** Examination of concepts and methods for improving human relationships. This course has an experiential component. *(On demand)*

(644) **CSLG 6120. Group Counseling. (3G)** Investigation of concepts of group counseling and the means for developing facilitative interaction in groups which may include an experiential component as a major learning activity. *(Fall, Spring, Summer)*

(668) **CSLG 6140. Elementary School Counseling and Guidance. (3G)** Prerequisites: CSLG 6100, 6110, 6120 or permission of the instructor. Introduction to the guidance function in the elementary school with emphasis on the counselor's role in counseling, consulting and coordinating school and community resources for the optimum benefit of the child. *(Fall)*

(680) **CSLG 6141. The Secondary School Counselor. (3G)** Prerequisites: CSLG 6100, 6110 and 6120, or permission of instructor. Development of functional skills necessary for integration of counseling activities into secondary school curriculum. Focus on the role of the counselor in classroom guidance, consultation, program design, curriculum and administration of special programs. *(Alternate years)*

(669) **CSLG 6150. Occupational Information. (3G)** A counseling-oriented course designed to help the counselor and/or career education teacher develop the ability to use career information with emphasis on understanding of occupational information, systems of collection and usage forms. *(Fall, Summer)*

(674) **CSLG 6152. Approaches to Career Development (K-12). (3G)** Designed to help the counselor or vocational development coordinator gain an understanding of and skills necessary for (1) the development, management and evaluation of a comprehensive, competency-based K-12 career education/counseling program, (2) infusing career education into K-12 curriculum in a counselor/consultant capacity, (3) establishing and leading successful individual and group career development activities. *(Spring)*

(664) **CSLG 6200. Introduction to Theories of Family Counseling. (3G)** Examination of appropriate interventions in working with families focusing on major theorists and techniques in the field. Does not prepare students to function as a marriage or family practitioner. *(Fall) (Alternate years)*

(667) **CSLG 6430. Practicum in Counseling and Guidance. (3G)** Prerequisites: CSLG 6100 and 6110. Supervision of individual and group counseling interventions conducted in field settings; special attention to the development of evaluative criteria for self and peer assessment. Graded on a *Pass/No Credit* basis. May be taken once for repeat credit with departmental approval. *(Fall, Spring, Summer)*

(671B) **CSLG 6435. Counseling: Seminar and Internship. (3-6G)** Prerequisite: permission of the Department. Supervised experience in a professional setting and a concurrent seminar to analyze behavior, develop materials, study administrative models and examine theory in relation to practice. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

(672) **CSLG 6800. Individual Study in Counseling. (1-6G)** Prerequisite: permission of Department of Human Services. Designed to permit students to conduct research on selected topics, examine specific counseling literature and the development of special projects under the direction of a faculty member. May be repeated for credit with department approval. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

**Courses for Advanced Graduate Students Only**

(782) **CSLG 7110. Individual Assessment. (3G)** Prerequisite: EDUC 6109 or PSYC 4140. Examination of the major aptitude, intelligence and other psychological tests commonly used in counseling with emphasis on test theory as well as the administration, scoring and interpretation of tests and the communication of their results. *(Alternate years)*

(780) **CSLG 7120. Administration and Supervision of Counseling Services. (3G)** Planning, operation, implementation and supervision of counseling and guidance services in schools and agencies with emphasis on the development of administrative and supervisory skills. *(Alternate years)*

(781) **CSLG 7400. Sixth-Year Field Experience in Counseling and Guidance. (3G)** Field experience to allow the student to integrate knowledge while under supervision, as well as a weekly seminar for instruction and support. Emphasis on supervisory, consultative and program evaluative competencies consistent with the student's career objectives. Offered on a *Pass/No Credit* basis. May be repeated for credit. *(Fall, Spring)*

(772) **CSLG 7801. Individual Study. (1-6G)** Prerequisite: permission of the Department of Human Services. With the direction of a faculy member, students will plan and implement appropriate objectives and learning activities to develop specific areas of expertise through research, readings and individual projects. Offered only on a *Pass/No Credit* basis. May be repeated for credit. *(Fall, Spring)*

## HUMAN SERVICES (HUSV)

**Courses for Graduate Students and Advanced Undergraduates**

(500) **HUSV 4115. Effective Human Systems. (3) (3G)** Systems approach to human development with emphasis on the need for coping skills which allow individuals to function effectively in various settings in life. *(Fall, Spring)*

(570) **HUSV 5000. Selected Topics in Human Services. (3-6) (3-6G)** Prerequisite: permission of the Department of Human Services. Seminars, independent study and clinical experiences. May be repeated for credit, with approval. *(Fall, Spring)*

**HUSV 5103. Substance Abuse: Primary Prevention. (3) (3G)** Primary prevention concepts, research, and programming and introduction to psychoactive drugs, their effects on the human physical function, intellectual perception, and psyche. *(Spring) (Evenings)*

**HUSV 5104. Substance Abuse: Approaches to Intervention and Treatment. (3) (3G)** Concepts of drug dependency and various approaches to intervention and treatment. *(Fall) (Evenings)*

**Courses for Graduate Students Only**

(606) **HUSV 6100. Adjustment Problems, Children and Youth. (3G)** Study of adjustment problems of childhood and adolescence with emphasis on theoretical postulates as they relate to problems of behavior and attitudes in educational enviornments. *(Fall, Spring) (Evenings)*

(608) **HUSV 6102. Learning and Development. (3G)** In-depth study of selected theories of learning and development. *(Fall, Spring, Summer) (Evenings)*

(621H) **HUSV 6110. Parent Education. (3G)** Study of principles and practices for research, development of programs and evaluation in parent education. *(On demand) (Evenings)*

(621I) **HUSV 6115. Strategies and Designs in Human Development and Learning: Child Advocacy. (3G)** Study of principles and practices for educational personnel to employ as child advocates. *(On demand) (Evenings)*

(622) **HUSV 6120. Creativity, Learning Environments and Experiences. (3G)** Investigation of theories of creativity and their relationship to curriculum development. *(Spring, Summer) (Evenings)*

(625F) **HUSV 6130. Concepts of Teaching and Learning: Children's Play. (3G)** Examination of theories, trends and current practices in children's play. *(Spring) (Evenings)*

**Courses for Advanced Graduate Students Only**

(735) **HUSV 7135. Readings in Learning and Development. (3G)** Examines research data about the development of human behavior interpreted in terms of multiple disciplines, including psychology, anthropology and ethnology. *(On demand) (Evenings)*

# Curriculum and Instruction

*Degree:* M.Ed. *Chairperson:* William M. Britt

## MASTER OF EDUCATION DEGREE

The Department of Curriculum and Instruction offers M.Ed. programs for students seeking teaching certification in Early Childhood Education, Intermediate Education, Middle Grades Education, Secondary Education, Special Education, English as a Second Language, and Reading Education.

**Degree Requirements.** The candidate for the Master of Education degree must successfully complete a minimum of 36 semester hours of work in courses approved for graduate credit including at least 18 hours in courses which are open to graduate students only.

In addition, all students must successfully complete either a written comprehensive exam or a master's project as a requirement for graduation. While these would be completed at or near the end of the student's program of study, the student should consult with the adviser within the first 12 hours of course work concerning procedures and preparation for either option.

*Approval of Individual Programs.* Approval of each student's program will be the responsibility of an adviser. The student also will have a graduate committee for consultation and evaluation. The committee shall consist of the adviser and at least two other faculty members representing the major areas of concentration in the student's program.

*Comprehensive Examination.* Each student will complete either an extensive master's project or a written comprehensive examination. The project is designed, carried out and evaluated under the direction of the student's Graduate Committee and may take the form of a thesis, a research study or a program development activity. The written comprehensive examination is prepared and evaluated by the student's Graduate Committee and is intended to determine the extent of the student's assimilation of his/her total program. Both the project and the written examination are followed by an oral examination wherein the student clarifies, expands upon and/or defends the written project report or examination. More information on the project or written examination may be obtained in the Department.

**M.Ed. In Early Childhood Education.** This program is designed for students seeking Graduate Teaching Certification at the kindergarten through fourth grade levels. The requirements are as follows: *Core Courses* (nine hours)—EDUC 6100, 6101, and 6120; *Professional Specialization* (12 hours)—HUSV 6102, READ 5260 or 5270, EDUC 6474 and 6475; *Cognate Field Electives* (six hours) and *Teaching Field Electives* (nine hours). Inquiries about the program may be addressed to the Coordinator, John A. Gretes, Department of Curriculum and Instruction.

**M.Ed. In Intermediate Education.** This program is designed for students seeking graduate teaching certification at the fourth through sixth grade levels. The requirements are as follows: *Core Courses* (nine hours)—EDUC 6100, 6101, and 6120; *Professional Specialization* (nine hours)—READ 5260 or 5250, EDUC 6474 and 6121; *Cognate Area of Specialization and Certification* (12 hours). The cognate fields of study are limited to those subjects taught in intermediate (4-6) schools. The student must have a total of 12 hours from one of the following areas: language arts, social studies, science, mathematics, art, music, physical education or health. The specialization also may be in one field such as history or biology. One area of certification requires 12 hours; two areas of certification requires 18 hours, nine hours in each area. *Teaching Field Electives* (six hours). Inquiries about the program may be addresed to the Coordinator, John A. Gretes, Department of Curriculum and Instruction.

**M.Ed. In Middle Grades Education.** This program is designed for students seeking graduate teaching certification at the sixth through ninth grade levels. Degree requirements include nine hours of required *Core Courses*—EDUC 6100, 6101, and 6120 or 6109 or 6150); nine hours of *Professional Specialization*—EDUC 6220, 6225, 6473 which includes an internship experience; 12 hours in a *Content Field* (communication skills, mathematics, science, social studies); and six hours of electives. Inquiries about the program may be addressed to the Coordinator, Charles R. Whaley, Department of Curriculum and Instruction.

**M.Ed. In Curriculum and Instruction (Secondary Education).** This program is designed for students seeking graduate certification at the ninth through twelfth grade levels. The requirements are as follows: *Core Courses* (12 hours)—EDUC 6100, 6101, 6120, and 6475; electives (six hours); and *Cognate electives from certification field* (18 hours).

**M.Ed. In Teaching English as a Second Language.** This program is designed to train both TESL specialists and regular classroom teachers seeking additional expertise in TESL at the elementary and secondary levels. Program graduates will be eligible for the "G" certificate in TESL (K-12) if they already have an "A" teaching certificate and minimum proficiency in a foreign language. Course requirements for both these students and students not seeking the "G" certificate in TESL include *Part I. Foundations* (12 hours)—EDUC 6100, ENGL 6161 and 4263, and one course from the following: FORL 4200, ENGL 4165, ANTH 4120 or 4090; *Part II. Curriculum* (9 hours)—ENGL 4166, EDUC 5101 and 6120; *Part III. Specialization* (12 hours)—READ 6250, EDUC 5103 and 6010, and a thematic elective course; *Part IV. Internship* (3 hours). Inquiries about the program may be addressed to the Coordinator, Joseph B. Roberts, Department of Curriculum and Instruction.

**M.Ed. In Reading Education.** This program is designed to train both reading specialists and regular classroom teachers seeking additional expertise in reading at the elementary and secondary levels. Program graduates will be eligible for the "G" certificate in Reading, K-12. Course requirements include *Part I. Foundations* (nine hours)—EDUC 6100 and 6101 and READ 5260 or 6250; *Part II. Curriculum* (six hours)—EDUC 6120 and READ 5250 or 5270; *Part III. Specialization* (15 hours)—READ 6260, 6470 and 6480, ENGL 6103 and EDUC 6109 or PSYC 4140; *Thematic Electives* (six hours). Inquiries about the program may be addressed to the Coordinator of Reading Education, Department of Curriculum and Instruction.

**M.Ed. In Special Education.** This program is designed for students seeking graduate certification in Special Education (mental handicaps, learning disabilities, emotional handicaps, gifted and talented, cross-categorical). The requirements are as follows: EDUC 6100, 6101 and 6109; SPED 5130, 6100, 612X, 611X, 6130, 647X (X depends on certification track); and electives (six hours). Inquiries about the program may be addressed to the Coordinator, Terry L. Rose, Department of Curriculum and Instruction.

**M.Ed. in Special Education: Severely and Profoundly Handicapped Track.** The Severely and Profoundly Handicapped track requires 36 semester hours of course work including EDUC 6100 and 6101; CSLG 6200; and SPED 5130, 6116, 6117, 6126, 6127, 6474 and 6630.

## CERTIFICATE OF ADVANCED STUDY (SIXTH YEAR) PROGRAMS

The Department of Curriculum and Instruction offers Certificate of Advanced Study (CAS) programs in Elementary Education (Early Childhood and Intermediate), Secondary Education (History, English and Mathematics), and Special Education.

**General Requirements.** The CAS programs involve a minimum of 36 semester hours of course work including a supervised internship, except for the CAS program in Special Education which requires a minimum of 33 semester hours. At least half of each student's program must consist of advanced graduate courses. Students must also successfully complete a comprehensive review.

**Residence Requirement.** All course work for the Certificate in Advanced Study programs must carry UNCC residence credit except that six semester hours of approved course work may be accepted for transfer credit from another accredited institution. Of the course work carrying UNCC residence credit, nine (9) semester hours must be earned through registration and completion of these courses on the UNCC campus by one of the following means:

1. Registration for nine semester hours of credit during one semester or two summer sessions. This would be considered full-time work on the campus.
2. Registration for nine semester hours of credit during two consecutive semesters during an academic year. A spring semester of one academic year combined with the fall semester of the following academic year would also meet this requirement.
3. Registration for nine semester hours of credit during a semester and consecutive summer term or a summer term and consecutive semester. Either of the summer terms could be used to meet this requirement.
4. Should unusual or extenuating circumstances prevent a student from meeting the on-campus requirement, the student may appeal in writing to the Student Personnel Committee. The Student Personnel Committee would consider the appeal and render a decision.

**Certificate of Advanced Study in Elementary Education.** This program is designed for students seeking advanced graduate skills in the areas of Early Childhood and Intermediate Education. The requirements for the program are as follows: ADMN 7250, EDUC 6110, 7610, HUSV 7135 and 7842. The student must select one course from the following (three hours): PSYC 4140, EDUC 6109 and 7110. Also, the student is to select one course from the following (three hours): READ 6250, EDUC 6150, 6250 and 6251. The student must select six semester hours from teaching field electives. Twelve semester hours must be selected from cognate areas of study or electives outside the College of Education and Allied Professions.

**Certificate of Advanced Study in Secondary Education.** This program is designed for students who are seeking advanced skills in the area of Secondary Education, concentrating in English, mathematics or history. The requirements for the program are as follows: ADMN 7250, EDUC 6110, 7623, 7420 or 7840 and 7220 or 7221. Students may choose three hours from the following to complete their professional education sequence (18 hours): SPED 6100, READ 6250, READ 5270, HUSV 7135 and EDUC 7622. Eighteen semester hours must be selected from a cognate area of study.

**Certificate of Advanced Study in Special Education.** This program is designed to prepare students to be specialists in special education curriculum, research and development, technical assistance, and instruction and to assume leadership positions in special education. The requirements of the program are: EDUC 6110, and SPED 7110, 7611, 7112, 7113 and 7471. The student must complete an individual project (three hours) and select approved electives from the departments of Curriculum and Instruction, Health and Physical Education, Educational Administration, Human Services, Psychology, or Sociology and Anthropology.

## COURSE DESCRIPTIONS

### EDUCATION (EDUC)

**Courses for Graduate Students and Advanced Undergraduates**

(570) **EDUC 5000. Selected Topics in Education. (3-6) (3-6G)** Prerequisite: EDUC 2150 and permission of the Department of Curriculum and Instruction. Seminars, independent study and clinical experiences. May be repeated for credit as topics vary with departmental approval. *(Fall, Spring)*

(501) **EDUC 5101. Second Language Diagnosis and Evaluation. (3) (3G)** For current and future teachers of English as a Second Language (TESL) to develop multiple criteria assessment model as a TESL diagnostician and to master other competencies prescribed by the State of North Carolina. *(Fall)*

(503) **EDUC 5103. Teaching English as a Second Language. (3) (3G)** For current and future teachers of English as a Second Language to master a variety of approaches, methods and techniques of teaching ESL and other competencies prescribed by the State of North Carolina. *(Spring)*

(512) **EDUC 5120. Microcomputer Applications in Education. (3) (3G)** Microcomputer systems and software for enhancing teaching, learning and educational management. Hands-on experience in evaluating, selecting and integrating courseware into elementary, secondary and higher education. Principles of programmed learning and instructional design as they relate to microcomputer-based interactive instruction. *(Fall, Spring, Summer)*

**Courses for Graduate Students Only**

(673) **EDUC 6000. Topics in Education. (1-3G)** Prerequisite: permission of Department of Curriculum and Instruction. Examination of selected areas of interest in the education profession. May be repeated for credit as topics vary and with departmental approval. *(Fall, Spring)*

(600) **EDUC 6100. Theories of Human Development and Learning. (3G)** Concept of development; philosophical antecedents of developmental and learning theories; role of theory in explaining human nature; components of theoretical explanations; evaluating theories. *(Fall, Spring)*

(601) **EDUC 6101. Research Methods in Human Development. (3G)** Empirical, logical and conceptual research problems; methods and procedures of research; designing research proposals; writing reviews of related literature; library research. *(Fall, Spring)*

(602) **EDUC 6102. The Person and School in Urban Society. (3G)** The basic philosophical theories and socio-cultural forces that influence the objectives, structure and programs of schools, agencies and institutions in urban society. *(On demand)*

(609) **EDUC 6109. Interest, Aptitude, Intelligence. (3G)** Study of the social, psychological and philosophical concepts of interest, aptitude and intelligence as they contribute to the understanding of individual differences and needs. Assessment of human behavior through the administration and evaluation of current assessment devices and tests. *(Fall, Spring, Summer) (Evenings)*

(610) **EDUC 6110. Descriptive and Inferential Statistics in Education. (3G)** Prerequisite: EDUC 6101 or equivalent. Objective decision-making in research; inferential methods; elementary parametric and non-parametric techniques in hypothesis testing; data processing through University computer facilities. *(Fall, Spring)*

(620) **EDUC 6120. Curriculum Theory. (3G)** Study of theoretical constructs of curriculum and the nature of experience as they relate to facilitating theory into practice. Emphasis on research and experimentation in developing curriculum theory, processes, materials and relationships. *(Fall, Spring, Summer)*

(621B) **EDUC 6121. Instructional Design. (3G)** Prerequisites: completion of master's core—EDUC 6100 and 6101. Advanced instructional planning; systems development; task analysis; sequencing, delivery systems; summative and formative evaluation of instruction and student progress. *(Fall, Spring) (Evenings)*

(621F) **EDUC 6122. Curriculum Development. (3G)** Planning, development and evaluation of curricular programs. *(Fall)*

(621A) **EDUC 6123. Strategies and Design in Human Development and Learning: Human Development. (3G)** Examination of the process of program planning, development and evaluation for educators in nontraditional settings. *(Spring)*

(635) **EDUC 6135. Learning Media, Resources and Technology. (3G)** Selection, use and evaluation of technological innovations in instructional media. *(Fall, Spring)*

(640) **EDUC 6140. Introduction to Adult Education. (3G)** Overview of the field of adult education including the nature, growth and historical development of adult education, its problems, and possible solutions. Emphasis on philosophy and objectives, major figures and movements, possible careers, and an international perspective. *(Fall)*

(641) **EDUC 6141. Designing Learning Experiences for Adults. (3G)** Examination of unique characteristics and major learning problems of adults with attention to factors which affect learning ability, achievement, and motivation throughout the adult life cycle and the principles of curriculum building and instructional design. *(On demand)*

(643) **EDUC 6143. Planning, Conducting, and Evaluating Adult Programs. (3G)** Field-centered investigation of adult education programs conducted by various organizations, agencies, and groups as a primary, supplementary, or complementary function. Emphasis on the theoretical foundations upon which the programming process is predicated, developing a theoretical model, and acquiring the conceptual tools necessary for analyzing the programming process and conducting effective evaluations in any adult education organization. *(Fall)*

(664) **EDUC 6144. Methods and Techniques for Adult Learners. (3G)** Examination of the characteristics unique to the educated and to the undereducated adult and analysis of the methods and techniques available for working with adults and their applicability under varying circumstances. Group participation in the various methods and techniques will be required. *(On demand)*

(625A) **EDUC 6150. Models of Teaching. (3G)** Prerequisites: EDUC 6100, 6101 and 6120. Learning theory associated with information processing, personal, social, and behavioral models; current trends of instructional methodology for a variety of content areas. *(Spring)*

(605) **EDUC 6220. Adolescence and Learning. (3G)** Study of adolescence as a phase of development and its relationship to the learning process. *(On demand)*

(602) **EDUC 6225. Topics and Issues in Middle Grades. (3G)** Examination of educational practice in the middle grades (6-9) including trends and issues unique to the middle grades. Emphasis on broadening understanding of foundational components, organizational patterns, instructional programs and management techniques. *(Spring) (Evenings)*

(625C) **EDUC 6250. Issues in Science Education. (3G)** Orientation to content, curriculum and methods appropriate for teaching science in grades K-9. Emphasis is on a critical examination of current trends and practices in the teaching of science. *(Yearly) (Evenings)*

(625D) **EDUC 6251. Teaching and Learning Mathematics. (3G)** Mathematics education for teachers K-12. Problem solving in selected areas of mathematics; evaluation of problem solving; research in mathematics education. *(Yearly) (Evenings)*

(626D) **EDUC 6252. Diagnosing Mathematical Learning Problems. (3G)** For teachers K-9. Assessment of student difficulties in learning mathematics. *(On demand) (Evenings)*

(654) **EDUC 6254. Issues in Social Studies Education. (3G)** Current issues in teaching and learning social studies. Emphasis on current trends in curriculum, advanced instructional methods, and research for grades K-12. *(Yearly)*

(670A) **EDUC 6470. Early Childhood Education Clinical Experience. (3G)** Program of experiential learning activities in the student's level and/or area of academic concentration in an approved school setting (K-3). *(Fall)*

(670D) **EDUC 6471. Intermediate Education Clinical Experience. (3G)** Program of experimental learning activities in the student's level and/or area of academic concentration in an approved school setting (4-9). *(Spring)*

(670C) **EDUC 6472. Secondary Education Clinical Experience. (3G)** Program of experimental learning activities in the student's area of academic concentration in an approved secondary school setting. *(Fall, Spring) (Evenings)*

(670D) **EDUC 6473. Middle Grades - Internship and Seminar. (3-6G)** Supervised clinical activities to develop and assess the student's ability to observe, analyze and recommend changes for curriculum and instruction in the middle grades classroom. *(Fall, Spring) (Evenings)*

(671A) **EDUC 6474. Elementary Internship and Seminar. (3-6G)** Supervised clinical activities to develop and assess the student's ability to observe, analyze and recommend changes for curriculum and instruction of the elementary classroom. *(Fall, Spring) (Evenings)*

(671B) **EDUC 6475. Secondary Internship and Seminar. (3-6G)** Supervised clinical activities to develop and assess the student's ability to observe, analyze and recommend changes for curriculum and instruction of the secondary classroom. *(Fall, Spring) (Evenings)*

(671C) **EDUC 6476. Seminar and Internship in Human Development and Learning: Teaching. (3-6G)** Prerequisite: departmental permission. Supervised experiences in public, private school or non-school teaching with emphasis on developing skills as an education professional. Offered only on a *Pass/No Credit* basis. *(Fall, Spring)*

(651) **EDUC 6651. Piagetian Theory. (3G)** Prerequisite: permission of the instructor. Advanced seminar for investigation of Piagetian theory with emphasis on genetic epistemology, research and neo-Piagetian concepts. *(On demand)*

(672) **EDUC 6800. Individual Study in Education. (1-6G)** Prerequisite: permission of Department of Curriculum and Instruction. Designed to permit students to conduct research on selected topics, examine specific educational/human services literature and develop special projects under the direction of a faculty member. May be repeated for credit with departmental approval. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer) (Evenings)*

(699) **EDUC 6900. Project, Thesis or Comprehensive Examination. (0)** Research plan or intention to take the final comprehensive written examination is arranged with the student's adviser and graduate committee. *(Fall, Spring)*

**Courses for Advanced Graduate Students Only**

(721) **EDUC 7110. Applied Research. (3G)** Development and implementation of proposals for research; use of designs for research and statistical procedures as required by research plans of graduate students. *(Fall)*

(722) **EDUC 7120. Multivariate Analytic Methods. (3G)** Prerequisite: EDUC 6110 or equivalent. Multiple regression; factor analysis applied to descriptive, correlational and experimental research. *(On demand)*

(726) **EDUC 7126. Comparative Education. (3G)** Analysis of sociocultural forces affecting educational planning and comparison of contemporary educational systems of selected countries and the United States. *(On demand)*

(750) **EDUC 7220. Current Issues in Secondary Education. (3G)** Study of problems currently affecting secondary schools with emphasis on the student's skills of problem identification, delineation and the development of alternative solutions and their consequences. *(On demand) (Evenings)*

(751) **EDUC 7221. Evaluation of Secondary Curriculum and Instruction. (3G)** Examination of criteria and procedures for evaluating curricula and the instructional effectiveness of secondary classroom teachers. *(On demand) (Evenings)*

(772) **EDUC 7420. Internship: Peer Leadership in the Secondary School. (3G)** Supervised clinical activity to develop and assess the student's ability to exert leadership among the staff of a secondary school to solve a specified problem. *(On demand) (Evenings)*

(734) **EDUC 7610. Reading in Research in Elementary Education. (3G)** Seminar for in-depth examination of research literature in early childhood or intermediate education. *(Yearly) (Evenings)*

(752) **EDUC 7622. Analysis of Secondary Teaching. (3G)** Seminar on the systematic observation and analysis of instructional activities of teachers in secondary classrooms including classroom atmosphere, verbal and nonverbal communication, structuring of learning tasks. *(On demand) (Evenings)*

(753) **EDUC 7623. Applied Research Seminar in Secondary Education. (3G)** Design, implementation and dissemination of "action research" in a secondary education setting. *(On demand) (Evenings)*

(772) **EDUC 7840. Individual Project in Secondary Education. (3G)** In consultation with a faculty adviser, the student will identify and solve a problem in secondary education. *(On demand) (Evenings)*

(742) **EDUC 7842. Individual Project in Elementary Education. (3G)** In consultation with a faculty adviser, the student will identify and solve a problem in a specific area of elementary education. *(On demand) (Evenings)*

## READING (READ)

**Courses for Graduate Students and Advanced Undergraduates**

(525) **READ 5250. Reading in the Content Areas. (3) (3G)** Theories, research, problems and instructional methods associated with reading in the content areas of the middle grades and secondary school curriculum. *(Fall, Spring, Summer) (Evenings)*

(635G) **READ 5260. Relationship Between Writing and Reading K-12. (3) (3G)** Theories, research and instructional methods pertaining to related developmental processes of reading and writing from pre-school through high school. *(Spring)*

(630) **READ 5270. Trends and Issues in Reading/Language Arts. (1-3)(1-3G)** Theories, research and instructional methods associated with reading and the language arts, pre-school through high school; questions of effectiveness related to instructional approaches and materials; related topics such as dialect, testing and literacy. *(Summer)*

**Courses for Graduate Students Only**

(625B) **READ 6250. Language Development and Reading. (3G)** Theories, research, instructional approaches and materials, and evaluation strategies pertaining to the relationship between the development of language competence and performance and the development of reading abilities and interests. *(Fall, Summer) (Evenings)*

(626B) **READ 6260. Diagnostic Instruction in Reading. (3G)** Prerequisite: READ 6250 or permission of instructor. Examination, use, and critique of theories and research about reading processes and problems; diagnostic approaches and techniques; instructional strategies to improve reading proficiency. *(Spring, Summer) (Evenings)*

(636) **READ 6470. Practicum in Reading Instruction. (3G)** Prerequisite: READ 6260 or permission of instructor. Application and evaluation of instructional approaches in reading; working with students and colleagues in planning, implementing, observing and evaluating instruction. *(Fall) (Evenings)*

(671G) **READ 6480. Coordination of Reading Programs. (3G)** Prerequisites: completion of graduate reading course sequence and permission of instructor. Assumption and evaluation of the role of the reading teacher who assists school staff members in assessing, planning, implementing, and evaluating the total school reading program. Offered only on a *Pass/No Credit* basis. *(Spring) (Evenings)*

## SPECIAL EDUCATION (SPED)

**Courses for Graduate Students and Advanced Undergraduates**

(530) **SPED 5130. Classroom Management. (3) (3G)** Prerequisite: SPED 3160 or graduate standing. Theoretical context and related applied strategies necessary to effectively manage the classroom behaviors of individuals or groups of students. Additional work required for graduate credit. *(Fall, Spring) (Evenings)*

**Courses for Graduate Students Only**

(603) **SPED 6100. Introduction to Special Education. (3G)** Examination of the historical antecedents of contemporary practices in the field of special education with emphasis on the conceptual models of child variance and current trends in the field of education. *(Fall, Spring, Summer) (Evenings)*

(612) **SPED 6105. Physiological Aspects of Learning. (3G)** Examination of theories of learning as they relate to the structure and physiology of the central nervous system with emphasis on developmental abnormalities and disease processes that affect learning in children and youth. *(On demand)*

(625E) **SPED 6111. The Gifted and Talented. (3G)** Examination of the historical and philosophical perspectives of education for gifted and talented learners with emphasis on identification procedures, creativity, laws/policies, and current research in the field of giftedness. *(Summer)*

(625H) **SPED 6112. Learning Disabilities. (3G)** Examination of learning disabilities with emphasis on theories, issues, current trends and definitions of learning disabilities as well as instructional strategies, program models and major contributions to the field. *(Fall, Summer) (Evenings)*

(625) **SPED 6113. Mental Handicaps. (3G)** Examination of historical antecedents, major contributors, current practices, issues and trends in the field of mental retardation. *(Spring) (Evenings)*

(625J) **SPED 6114. Emotional Handicaps. (3G)** Examination of the conceptual models of emotional disturbance with emphasis on operational models and current practices based on the constructs of the models. Consideration of administrative arrangements for programs for children with emotional behavior. *(Spring) (Evenings)*

(625K) **SPED 6115. Mild Handicapping Conditions. (3G)** Examination of theories and practice of cross-categorical programming, with emphasis on theories, issues, current trends, current practices, and consultation practices. *(Fall) (Evenings)*

(627) **SPED 6116. Career and Vocational Techniques. (3G)** Methods and procedures used in preparing handicapped people for the world of work. Prevocational work study and post-school programs leading to or approaching adult independence are studied. *(Fall) (Evenings)*

(630) **SPED 6117. Introduction to Severely/Profoundly Handicapped Persons. (3G)** Social and cultural antecedents to contemporary services for severely/profoundly handicapped persons. Examination of historical events that lead to social attitudes, academic theories, and operational definitions. Study of general and characteristic behavior, nature and needs of these individuals within a developmental framework. Current issues are examined as current research is discussed. *(Fall) (Evenings)*

(621G) **SPED 6121. Methods and Materials: Mental Handicaps. (3G)** Examination of the principles and practices of curriculum development and modification and current instructional methodologies for the mentally handicapped learner. *(Fall) (Evenings)*

(621J) **SPED 6122. Methods and Materials: Emotional Handicaps. (3G)** Planning, implementation and evaluation of special education classrooms with emphasis on curriculum models, behavioral and academic strategies and individualized instruction for emotionally handicapped learners. *(Fall) (Evenings)*

(621K) **SPED 6123. Methods and Materials: Learning Disabilities. (3G)** Planning, implementation, and evaluation of instructional programs with emphasis on individual instruction, grouping for instruction, consultation, assessment, and program planning for the learning disabled. *(Spring) (Evenings)*

(628) **SPED 6124. Methods of Instruction for the Gifted. (3G)** Prerequisites: SPED 6111, EDUC 6109. A course designed to provide the skills necessary to plan, implement, and evaluate instructional procedures that facilitate learning by gifted students. *(Fall) (Evenings)*

(622) **SPED 6125. Instructional Practices: Cross-categorical. (3G)** Prerequisites: SPED 6100, EDUC 6109. Assessment procedures appropriate for use with the mildly handicapped. Assessment information will be used to plan for the most appropriate instruction for the mildly handicapped receiving education in a cross-categorical setting. *(Spring) (Evenings)*

(631) **SPED 6126. Methods for Teaching Severely Handicapped Students. (3G)** Corequisite: SPED 6127. Presentation and evaluation of principles and procedures used to program instruction for the severely handicapped. Students are required to design and implement an instructional program with a severely handicapped person. *(Spring) (Evenings)*

(632) **SPED 6127. Curriculum for Severely Handicapped Students. (3G)** Corequisite: SPED 6126. Selection of instructional programs appropriate for use with the severely handicapped. The student identifies strengths and weaknesses of educational programs and makes recommendations for their use with severely handicapped persons. *(Spring) (Evenings)*

(626E) **SPED 6130. Diagnostic Instruction. (3G)** Principles and practice of educational problem solving with emphasis on formal and informal assessment, observation and interviewing strategies for special educators. *(Fall, Spring) (Evenings)*

(671H) **SPED 6471. Internship: Gifted and Talented. (3-6G)** Prerequisite: approval of Department. Supervised experiences in observation, instruction and administration of programs with gifted and talented students. Offered only on a *Pass/No Credit* basis. *(Spring) (Evenings)*

71J) **SPED 6472. Internship: Learning Disabilities. (3-6G)** Prerequisite: approval of Department. Supervised experiences in observation, instruction and administration of programs with learning disabled. Offered only on a *Pass/No Credit* basis. *(Fall, Summer) (Evenings)*

71K) **SPED 6473. Internship: Emotional Handicaps. (3-6G)** Prerequisite: approval of Department. Supervised experiences in observation, instruction and administration of programs with emotionally handicapped students. Offered only on a *Pass/No Credit* basis. *(Spring, Summer) (Evenings)*

71L) **SPED 6474. Internship: Mental Handicaps. (3-6G)** Prerequisite: approval of Department. Supervised experiences in observation, instruction and administration of programs with mentally handicapped students. Offered only on a *Pass/No Credit* basis. *(Spring, Summer) (Evenings)*

71M) **SPED 6475. Internship: Mild Handicaps. (3-6G)** Prerequisite: approval of Department. Supervised experiences in observation, instruction and administration of programs with special needs students. Offered only on a *Pass/No Credit* basis. *(Fall, Summer) (Evenings)*

33) **SPED 6630. Problems and Issues of Severely Handicapped Students. (3G)** An in-depth study of significant issues, trends and practices in the education of severely handicapped persons which master teachers and supervisors may encounter with this population. Current trends and issues. *(Fall) (Evenings)*

71N) **SPED 6640. Seminar in Special Education. (3G)** Examination of current issues and trends related to special education program planning and instruction. *(Fall, Spring) (Evenings)*

71I) **SPED 6641. Seminar in Curriculum Development: Gifted and Talented. (3G)** Procedures and suggestions for developing gifted and talented programs; philosophy of the teacher, school and community assumptions of curriculum; child characteristics; parental concerns; teaching styles. *(Spring) (Evenings)*

**Couses for Advanced Graduate Students Only**

05) **SPED 7110. Special Education Program Planning and Evaluation. (3G)** Techniques used by individuals in leadership positions in special education as they engage in program planning and evaluation. *(Fall) (Evenings)*

15) **SPED 7112. Issues in Special Education. (3G)** Examination of current issues in special education, including legislation, policy, funding, litigation and program trends. *(Spring) (Evenings)*

20) **SPED 7113. Special Education Technology. (3G)** Examination of recent advances in the application of educative media, materials and technology in the field of special education. *(Spring) (Evenings)*

71) **SPED 7471. Advanced Internship in Special Education. (3G)** A field-based experience in a position of leadership in special education. *(Spring) (Evenings)*

10) **SPED 7611. Seminar in Special Education Research. (3G)** Examination of essential readings in each of the areas of exceptionality as they relate to curricular decision-making. *(Fall) (Evenings)*

# Department of Educational Administration

*Degrees:* M.Ed.; doctoral studies in cooperation with UNC-Chapel Hill
*Certificate:* C.A.S.

*Chairperson:* Associate Professor Lyons
*Professors:* Fretwell, Hackney, Pittillo, Smith
*Associate Professor:* Pleasants
*Assistant Professor:* Gwaltney

The primary mission of the Department of Educational Administration is to prepare students to assume leadership roles in organizations in general and in educational organizations in particular. The Department of Educational Administration offers the Master of Education (M.Ed.) degree and the Certificate of Advanced Study (CAS) with a concentration in Educational Administration or Curriculum and Instruction (Supervision). Students are awarded the master's degree or the Certificate of Advanced Study and the appropriate graduate level certification upon completion of the specified requirements. The Department also offers programs of study for students who wish to add graduate (fifth year) or Certificate of Advanced Study (sixth year) certification in Educational Administration or Curriculum and Instruction (Supervision). An interinstitutional doctoral program (Ed.D.) is offered in conjunction with The University of North Carolina at Chapel Hill. This program is intended to serve the needs of practicing public school administrators in the southern Piedmont region of North Carolina.

## MASTER OF EDUCATION DEGREE

The Department offers the Master of Education (M.Ed.) degree with a concentration in Educational Administration or Curriculum and Instruction (Supervision).

**Degree Requirements.** The candidate for the M.Ed. degree must successfully complete a minimum of 36 semester hours of work in courses approved for graduate credit including at least 18 hours in courses which are open to graduate students only. In addition, all students must successfully complete either a written comprehensive exam or a master's project as a requirement for graduation. While these are completed at or near the end of the student's program of study, the student should consult with the adviser within the first 12 hours of course work concerning procedures and preparation for options.

*Approval of Individual Programs.* Approval of each student's program will be the responsibility of an adviser. The student will also need a graduate committee for consultation and evaluation. The committee shall consist of the adviser and at least two other faculty members representing the major areas of concentration which are significant to the student's program.

*Comprehensive Examination.* Each student will complete either an extensive master's project or a written comprehensive examination. The project is designed, carried out and evaluated under the direction of the student's Graduate Committee and may take the form of a thesis, a research study or a program development activity. The written comprehensive examination is prepared and evaluated based on the student's assimilation of his/her total program. Both the project and the written examination are followed by an oral examination, wherein the student clarifies, expands upon and/or defends the written project report or examination.

**M.Ed. Degree in Educational Administration.** This program is designed for students seeking Level I Administration Certification (Principal's Certificate). The required courses are: EDUC 6100, 6101, and 6120 and ADMN 6160, 6161, 6165, 6166, and 6490. In addition to these courses, a student must select two electives from within the College of Education and Allied Professions and two courses from a cognate area such as management, political science, or sociology.

**M.Ed. Degree in Curriculum and Instruction.** The master's degree in Curriculum and Instruction which qualifies one for the Supervisor's Certificate (Level I) has two tracks: Generalist and Specialist. Students in both tracks complete 21 semester hours of required courses: EDUC 6100, 6101 and 6120 and ADMN 6121, 6125, 6165, and 6491. Students in the **Generalist Track** must take 15 semester hours from restricted electives in the College of Education and Allied Professions selected from Administration and Supervision, Curriculum and Instruction and other appropriate program areas. Students in the **Specialist Track** complete 15-18 semester hours in a special subject area in the College of Arts and Sciences, such as English, history, or mathematics.

## CERTIFICATE OF ADVANCED STUDY (SIXTH YEAR) PROGRAMS

The Department offers Certificate of Advanced Study (CAS) programs in Curriculum and Instruction (Supervision) and Educational Administration. Upon completion of the program, the student is eligible to receive Level II certification in Curriculum and Instruction or Level II certification in Educational Administration.

**General Requirements.** The CAS programs involve a minimum of 36 semester hours of course work including a supervised internship. At least half of each student's program must consist of advanced graduate courses. Students must also successfully complete a comprehensive review.

All course work for the Certificate of Advanced Study programs must carry UNCC residence credit. Six semester hours of approved course work may be accepted for transfer credit from another accredited institution. Of the course work carrying UNCC residence credit, nine (9) semester hours must be earned through registration and completion of these courses on the UNCC campus by one of the following means:

1. Registration for nine semester hours of credit during one semester or two summer sessions. This would be considered full-time work on the campus.
2. Registration for nine semester hours of credit during two consecutive semesters during an academic year. A spring semester for one academic year combined with the fall semester of the following academic year would also meet this requirement.
3. Registration for nine semester hours of credit during a semester and consecutive summer term or a summer term and consecutive semester. Either of the summer terms could be used to meet this requirement.
4. Should unusual or extenuating circumstances prevent a student from meeting the on-campus requirement, the student may appeal in writing to the Student Personnel Committee. The Student Personnel Committee would consider the appeal and render a decision.

**Certificate of Advanced Study in Curriculum and Instruction (Supervision).** This program is designed for students in or seeking leadership positions as supervisors in public or private schools. The requirements of the program are as follows: EDUC 6110 and ADMN 6166, 7250, 7695, 7196, 7197, and 7191. The remaining 15 semester hours must come from restricted electives in the College of Education and Allied Professions and/or from cognate areas of study.

**Certificate of Advanced Study in Educational Administration.** This program is designed for students in or seeking leadership in public or private school administration. The requirements for the program are as follows: EDUC 6110 and ADMN 7250, 7190, 7191, 7192, 7490.

The following are restricted electives from which the student must select two courses: ADMN 7103, 7194, 7196, and 7697. Two courses also must be selected from a cognate area of study such as management, political science or sociology.

## COURSE DESCRIPTIONS

### EDUCATIONAL ADMINISTRATION (ADMN)

(621C) **ADMN 6121. Strategies and Designs in Curriculum Development. (3G)** Examination of principles and practices for educational leaders in program design, implementation and evaluation. *(Fall)*

(625) **ADMN 6125. Advanced Instructional Techniques. (3G)** Analysis of models of teaching and the match between attributes of the models and the instructional outcomes desired by the teacher. *(Spring, Summer)*

(660) **ADMN 6160. Introduction to Educational Administration. (3G)** Examination of behavioral components of administrative theory, organization, decision-making and planning for educational development including appraisal of significant functions, techniques, practices and problems as they relate to public school systems, social institutions, and the system of social and governmental agencies. *(Fall, Spring, Summer)*

(661) **ADMN 6161. The Principalship. (3G)** Examination of school administration focusing on the role, task and responsibilities associated with the principalship with special attention to the conceptual, human and technical skills associated with the principalship. *(Fall, Summer)*

(665D) **ADMN 6165. Supervision of Instruction. (3G)** Examination of the fundamentals in the areas of clinical supervision, in-service education and leadership in curriculum development. *(Fall, Spring, Summer)*

(665E) **ADMN 6166. Educational Leadership. (3G)** Examination of leadership in formal organizations and social and behavioral science research concerning leadership ability with emphasis on educational organizations and the role of the leader in the accomplishment of organizational goals. *(Spring, Summer)*

(672C) **ADMN 6490. Internship and Seminar: Administration. (3-6G)** Prerequisite: Department approval. Internship under the supervision of University and on-site personnel in a setting consistent with the student's professional goals in which the student will be involved in the diverse activities expected of the professional administrator. Seminars are held concurrently. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

(671D) **ADMN 6491. Internship and Seminar: Supervision. (3-6G)** Prerequisite: Department approval. Internship under the supervision of University and on-site personnel in a setting consistent with the student's professional goals in which the student will be involved in the diverse activities expected of the curriculum-instructional specialist. Seminars are held concurrently. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

(673) **ADMN 6601. Seminar in Administration and Supervision. (1-3G)** Prerequisite: permission of the Department. Examination of selected areas of interest in educational administration and supervision. May be repeated for credit with departmental approval. *(On demand)*

(672) **ADMN 6800. Independent Study. (1-3G)** Prerequisite: permission of the Department. Examination of selected areas of interest in educational administration and supervision under the direction of a faculty member. May be repeated for credit with departmental approval. *(Fall, Spring, Summer)*

(699) **ADMN 6909. Project/Thesis/Comprehensive Registration. (0G)** Prerequisite: permission of graduate adviser. The student must register for ADMN 6909 during the term in which he/she expects to take the comprehensive examination. Offered on a *Pass/No Credit* basis.

**Courses for Advanced Graduate Students Only**

(790) **ADMN 7190. Public School Administration. (3G)** Examination of theory and practice of public school administration including the roles of school boards, superintendents, central office administrators and other members of the leadership team at the district-wide level with emphasis on the role of the superintendent. *(Spring)*

(791) **ADMN 7191. School Law. (3G)** Examination of the legal aspects of school administration with special attention to case law and statutory provisions relevant to educational administration including examination of some court decisions that have influenced policies and practices in the schools. *(Spring)*

(792) **ADMN 7192. School Finance and Business Administration. (3G)** Examination of the theory and operation of school finance systems and school business administration with special attention to local, state and federal sources of school revenue and such business functions as budgeting and financing capital outlay projects. *(Fall, Summer)*

(793) **ADMN 7193. School Personnel Administration. (3G)** Examination of personnel administration in educational institutions with special attention to those functions and responsibilities related to the administration of personnel at the school district level including the contribution of the personnel function to the overall management and operation of a school system. *(Spring)*

(794) **ADMN 7194. Planning School Facilities. (3G)** Examination of practices, principles and procedures related to educational facility planning including an overview of the major steps involved in planning educational facilities and the roles of all participants in a building program with special emphasis on the roles of the superintendent and board of education. *(Summer)*

(796) **ADMN 7196. Program Evaluation. (3G)** Examination of strategies and techniques of program evaluation with emphasis on the mastery of skills for utilization of selected procedures for analyzing teaching/learning processes. *(Spring)*

(725) **ADMN 7250. Educational Policy Studies: Trends, Issues, and Problems. (3G)** Examination of educational issues, trends, problems, proposals, policies, and practices within historical, social, economic, political, and philosophical contexts. *(Fall, Spring, Summer)*

(733) **ADMN 7489. Practicum in Staff Development. (3G)** Examination of techniques of delivering in-service training and development of leadership for in-service educational programs including design and implementation of a staff development program in a school setting. *(On demand)*

(771) **ADMN 7490. Culminating Experience-Administration. (3-6G)** Demonstration of appropriate leadership abilities in a field setting. Required for school administrators. May be repeated for credit. *(Fall, Spring, Summer)*

(772) **ADMN 7491. Culminating Experience-Supervision. (3-6G)** Demonstration of appropriate leadership skills in a field setting. Required for curriculum and instruction specialists. May be repeated for credit. *(Fall, Spring, Summer)*

**ADMN 7601. Seminar in Administration and Supervision. (1-3G)** Prerequisite: permission of the Department. Examination of selected areas of educational administration and supervision. May be repeated for credit with departmental approval. *(On demand)*

(795) **ADMN 7695. Advanced Seminar in Teaching and Learning. (3G)** Examination of a number of current teaching models to provide a framework for choosing those appropriate for a given classroom setting with special attention to the relationship between teaching strategies and learning outcomes. *(Fall)*

(797) **ADMN 7697. Advanced Seminar in Supervision. (3G)** Investigation and evaluation of current trends and issues in supervision as they relate to the role of the curriculum and instructional specialist with special attenton to the role of the instructional specialist in facilitating the teaching/learning process. *(Spring)*

**ADMN 7800. Independent Study. (1-3G)** Prerequisite: permission of the Department. Research on special projects under the direction of a faculty member. May be repeated for credit with departmental approval. *(Fall, Spring, Summer)*

# Health Education

*Degree:* M.Ed. *Coordinator:* Carl Shantzis

## HEALTH EDUCATION GRADUATE TRACK: MASTER OF EDUCATION DEGREE IN CURRICULUM AND INSTRUCTION

The central focus of the curriculum is the enhancement of the ability of health educators to provide information and strategies which will enable their students to actively seek optimal health. All courses in the curriculum focus on methodology, knowledge and skills for the primary purpose of helping the health education teacher affect health behavior appropriate for maintaining wellness at the highest level possible for each individual. Emphasis is placed on the school, agency, corporate, and community setting as contrasted to clinical situations. A Graduate Teaching Certification in Health Education will be awarded to those who successfully complete the track and other teaching certification requirements.

**Requirements for the Health Education Graduate Track.** The candidate for the degree of Master of Education must successfully complete a minimum of 36 semester hours of work in courses approved for graduate credit. Required courses for the degree with a track in health education are HLED 6120, 6140, 6150, 6160 and 6471 and EDUC 6100, 6101 and 6120. Health Education electives may be substituted for up to two of the five required HLED courses if the analysis of the student's transcript or Health Education Knowledge Test score demonstrates a reasonable expectancy of competency in the knowledge and skills for which the courses were designed. The Health Education Knowledge Test is used for advising and curriculum evaluation only. Electives needed to complete the 36-semester-hour requirement may be selected from other graduate health education listings, other departments in the College of Education and Allied Professions or other colleges at UNCC. Students may substitute other appropriate courses for health education courses with the consent of the health education program coordinator.

**Admission to Candidacy in the Health Education Graduate Track.** The academic requirements for admission to The University and to the College of Education and Allied Professions graduate programs which are described under "Requirements for Graduate Admission" apply to admission to the Health Education Track.

### COURSE DESCRIPTIONS

### HEALTH EDUCATION (HLED)

(620) **HLED 6120. Philosophy and Practice in Health Education. (3G)** Philosophy, planning, development, delivery, and evaluation of health education in school and alternative settings. *(On demand)*

(630) **HLED 6130. Health Risk Reduction and Disease Prevention. (3G)** Personal/professional management of health risk factors and lifestyle intervention processes for chronic/communicable diseases. *(On demand)*

**HLED 6131. Assessment and Development of Physical Fitness. (3G)** Prerequisite: consent of the instructor. Study of responses and adaptations to exercise, assessment techniques, exercise prescription, programming and leadership. *(Alternate years)*

(635) **HLED 6135. Health Product and Service Consumerism. (3G)** Teaching methodology, knowledge and skills for affecting appropriate health behaviors through emphasis on the individual consumer at the health marketplace. *(On demand)*

**HLED 6137. Health Promotion. (3G)** Prerequisite: consent of the instructor. An exploration of the practices of promoting health in various settings for a variety of consumers. *(Alternate years)*

**HLED 6138. Management and Leadership In Health Fitness Settings. (3G)** Prerequisite: consent of the instructor. Management and leadership knowledge and skills that will assist the health fitness professional in negotiating, communicating and working in business, industry and other corporately managed settings. *(Alternate years)*

(640) **HLED 6140. The Health Educator and Mental Health. (3G)** Mental health from the perspective of the role of the health educator as a facilitator of mental health with emphasis on primary prevention in the school setting. *(On demand)*

(650) **HLED 6150. Responsible Drug Use in Contemporary Culture. (3G)** Teaching methodology, knowledge and skills for affecting appropriate health behaviors through the study of the exploration of use, misuse and abuse of natural and synthetic chemicals in today's society. *(On demand)*

(660) **HLED 6160. Human Sexuality and Family Life Education. (3G)** A course designed for teachers responsible for family life education in school health programs. *(On demand)*

(670) **HLED 6170. Environmental Influence on Health: A Global Perspective. (3G)** Teaching methodology, knowledge and skills for affecting appropriate health behaviors through study of the causes and effects of contemporary environmental problems. *(On demand)*

(680) **HLED 6180. Applied Nutrition for Today's Consumer. (3G)** Teaching methodology, knowledge and skills for affecting appropriate health behaviors through study of the basic dietary needs of humans. *(On demand)*

(671) **HLED 6471. Seminar and Internship in Health Education. (1-6G)** Prerequisites: completion of 12 or more graduate credit hours in health education and permission of the health education program coordinator. Supervised practice in health education. May be repeated for a different seminar and internship. Offered only on a *Pass/No Credit* basis. *(Fall, Spring, Summer)*

(699) **HLED 6899. Problems and Topics in Health. (3G)** Topics and special problems related to ideas, practices or significant trends in health education. Seminars and independent studies. *(Fall, Spring, Summer)*

## PHYSICAL EDUCATION (PHED)

FOLLOWING ARE COURSES DESIGNED PRIMARILY FOR ADVANCED UNDERGRADUATES WHICH ARE AVAILABLE FOR GRADUATE CREDIT. SEE PAGE 260 FOR COMPLETE COURSE DESCRIPTIONS.

(504) **PHED 4204. Perceptual Motor Development. (3) (3G)**

(505) **PHED 4205. Perceptual Motor Learning. (3) (3G)**

(508) **PHED 4208. Perceptual Motor Therapy. (3) (3G)**

(510A) **PHED 4210. Perceptual Motor Therapy Laboratory. (1) (1G)**

(510B) **PHED 4211. Perceptual Motor Therapy Laboratory. (2) (2G)**

(510C) **PHED 4212. Perceptual Motor Therapy Laboratory. (3) (3G)**

# Engineering

*Degrees:* M.S.E.; doctoral studies in cooperation with North Carolina State University

*Civil Engineering Coordinator:* Jy S. Wu
*Electrical Engineering Coordinator:* Burton Wayne
*Mechanical Engineering Coordinator:* Paul H. DeHoff

## MASTER OF SCIENCE IN ENGINEERING

The Master of Science in Engineering program provides an opportunity for graduate-level engineering education both to improve on-the-job skills and to provide an advanced degree program for career development. The master's program is of an applied and professional nature though flexible enough to permit inclusion of management, communications and other subjects appropriate for total career development. In most respects the program is a one-year (30 hours) extension of the College's baccalaureate engineering programs and is administered by the three participating departments—Civil Engineering, Electrical Engineering, and Mechanical Engineering and Engineering Science. Students desiring to enter the program must present evidence of satisfactory undergraduate preparation in engineering, usually manifested by possession of a baccalaureate degree in some accredited program of engineering.

### Degree Requirements

1. The satisfactory completion of a minimum of 30 hours of approved graduate credits as prescribed by the student's department and program committee and fulfilling the following:

   A minimum of 18 semester hours of graduate course credit in a major area of engineering, no more than six of which can be for a research thesis or a creative design project; or, alternatively, no more than three of which can be for a special problem report. The decision as to whether a program will include a thesis, design project or problem report is to be made on an individual basis at the time of filing the student's Plan of Study (see page 385).

   A minimum of 12 semester hours of approved elective graduate course credit. In order to broaden the student's exposure to subject matter and faculty expertise, at least six hours of these electives must be in mathematics, science or another engineering department. Inclusion of business and/or communications courses is permitted.

2. Of the required minimum of 30 semester hours, at least 18 must be in courses primarily for graduate students, i.e., no more than 12 hours of the required 30 can be advanced undergraduate level courses approved for graduate credit.

3. Academic Standards: Only the grades of *A, B* or *C* shall be accepted as credit toward the MSE degree. A grade of *U* in any graduate course will terminate the student's enrollment in the MSE program subject to readmission as prescribed in the University *Catalog*. Similarly, an accumulation of three *C* grades will result in termination of the student's enrollment, subject to readmission to the program.

   A student in any graduate program is required to maintain satisfactory progress toward the degree. Continued enrollment is at all times subject to review on the basis of academic record and of actions with regard to observance of University rules and regulations.

   Students admitted to full standing will normally be permitted to re-enroll in successive terms, subject to satisfactory performance on course work and to load limitation imposed by their employers and The University. However, they must complete formal registration within the designated registration period. A student admitted conditionally to full standing will be permitted to continue, subject to satisfactory academic performance, until he or she has attempted 12 semester hours of graduate course work, at which time admission status will be reviewed by the major department and the Engineering Graduate Committee (EGC) after which the student will be advised as to his or her eligibility to continue.

   Students admitted to the unclassified status are permitted to take up to nine semester hours only and should fulfill requirements for admission to full standing by the application date for the following term if they wish to take additional course work.

   To qualify for the MSE degree, the student must have a grade point average of at least 3.0 based upon all courses acceptable for graduate credit for which he or she received a grade from The University.

4. Transfer and residence credit are to be in accordance with University regulations.

5. All work offered for the degree of Master of Science in Engineering must be completed within a six-year period.

**Plan of Study and Admission to Candidacy**

1. Plan of Study

   After completing at least nine but no more than 18 semester credit hours of graduate study, the student shall file a *Plan of Study*. This plan is formulated by the student with the advice and consent of his or her Graduate Program Adviser and the student's Program Committee and submitted for approval to the major department and the College's Engineering Graduate Committee. This plan is to indicate all course work and any other requirements (thesis, project problems, deficiencies, etc.) which the student is expected to fulfill satisfactorily before the awarding of the MSE degree.

   Relatively minor changes in an approved Plan of Study (e.g., change in a date for when a course is to be taken, or a direct substitution of one course for another course *in the same area)* may be made at the discretion of the student's adviser and Program Committee, although such changes shall be so indicated in the student's Admission to Candidacy.

   However, significant changes such as a change of adviser, change of research topic, change of minor area, etc., shall be submitted immediately to the EGC for its review to ensure that such changes conform to the existing guidelines for the MSE program.

2. Student's Program Committee

   Each student's Program Committee shall be composed of not less than three members of the graduate faculty, *one of whom shall be from a department other than the student's major,* with the Graduate Program Adviser serving as chair of the committee. The committee is recommended by the department after appropriate consultation between the adviser and student, and is subject to approval by the EGC at the time of submission of the Plan of Study.

   If the student is to pursue an industrially oriented design project through an internship in a local industrial or governmental organization, the person supervising the internship project shall be added to the Program Committee upon approval of the project by the student's Program Committee.

   The functions of the student's Program Committee are to participate in planning the student's program, evaluate his or her academic progress and make appropriate recommendations, evaluate the student's research thesis or design project, administer the comprehensive final examination, and, finally, make the recommendation as to the candidate's qualifications for the degree.

3. Admission to Candidacy

   Upon completion of a substantial amount of graduate work and in no case later than two weeks prior to the beginning of the semester in which the student expects to complete all requisites for the degree, the student shall file for Admission to Candidacy on a form supplied by the Graduate School. This application is a checksheet approved by the adviser, department chair, and the College Dean listing all course work to be offered for the degree (including transfer credit and courses in progress). A tentative or, if possible, actual date for the final examination should be agreed upon and indicated on this application. The date should be realistic and allow ample time for completion and review of the thesis or project.

**Final Examination**

Upon completion (or near completion) of all degree requirements as indicated in the Admission to Candidacy, the candidate shall stand for a final comprehensive examination(s). This examination(s) (written, oral or both) is to be set and administered by the student's Program Committee and is to cover those areas of study and/or research as deemed appropriate by the Committee.

The result of this examination and the Committee's recommendation as to the candidate's qualifications for the degree shall be transmitted to the Graduate School Office through the EGC.

## COOPERATIVE PH.D. PROGRAM IN ENGINEERING

The College of Engineering at UNCC has a cooperative arrangement with North Carolina State University (NCSU) to permit Ph.D. degree candidates located in Charlotte to be enrolled in the Ph.D. program at NCSU with the opportunity that most of the course work and the dissertation research can be carried out at UNCC. In addition to courses available at UNCC, selected doctoral-level courses from other participating institutions are available via the MCNC telecommunications network. See pages 426-428 for additional information and course descriptions for the Microelectronics Program.

**Admission.** Admission requirements to the cooperative Ph.D. program are:

1. The student must have previously earned a master's degree in engineering at UNCC or other accredited university. Admission for non-UNCC master's graduates will be conditional upon satisfactory completion of nine to 18 hours of course work at UNCC.
2. The student must be accepted by a department in the UNCC College of Engineering.
3. The student must be accepted by the UNCC Graduate School.
4. The student must be sponsored for the Ph.D. program by the department in which he or she has been accepted at UNCC.
5. The student's academic interests must parallel those of a UNCC faculty member who has been appointed to the NCSU graduate faculty or who is deemed eligible for such appointment.
6. The student must be recommended by the sponsoring department at UNCC for admission to the NCSU Ph.D. program. The student must be accepted by the NCSU Graduate School and the corresponding engineering department at NCSU. This acceptance by both UNCC and NCSU constitutes admission to the Ph.D. Program which normally should be completed within the second semester of work beyond the master's degree.

**Degree Requirements.** The degree of Doctor of Philosophy is to be awarded by NCSU to students who have accrued expanded knowledge beyond the master's degree and have demonstrated the capability to undertake and accomplish significant research in a specialty area with a minimum of supervision. UNCC guidelines for the degree requirements for the Doctor of Philosophy are the satisfactory completion of a minimum of 48 semester hours of graduate credit beyond the master's as approved by the student's Graduate Advisory Committee and fulfilling the following:

(a) A minimum of 15 semester hours of course work in a major area at the (UNCC) 6000 level or above.

(b) 18 semester hours of research credits.

(c) A minimum of six semester hours of graduate course work in each of two minor areas.

(d) Satisfactory completion of written qualifying examinations covering the major and minor areas.

(e) Satisfactory presentation and oral defense of a proposal for the research dissertation which meets the guidelines of a national funding agency such as DOE, NSF, HEW, etc.

(f) A research dissertation in the major area of specialization and a successful oral defense (Final Examination) of the dissertation.

(g) All work offered for the Ph.D. degree including transfer credits must be completed within a six-year period.

## COURSE DESCRIPTIONS

### CIVIL ENGINEERING (CEGR)

FOLLOWING ARE COURSES DESIGNED PRIMARILY FOR ADVANCED UNDERGRADUATES WHICH CARRY GRADUATE CREDIT. FOR COMPLETE COURSE DESCRIPTIONS, SEE PAGES 278-279.

(442) **CEGR 4142. Environmental Engineering II. (3) (3G)**

(462) **CEGR 4162. Transportation Planning. (3) (3G)**

(422) **CEGR 4222. Structural Steel Design II. (3) (3G)**

(424) **CEGR 4224. Advanced Structural Analysis. (3) (3G)**

(426) **CEGR 4226. Reinforced Concrete Design II. (3) (3G)**

**Courses for Graduate Students and Advanced Undergraduates**

THE 5000-LEVEL COURSES ARE FIRST-YEAR GRADUATE COURSES ALTHOUGH SOME ADVANCED SENIORS MAY ENROLL WITH PERMISSION OF THE DEPARTMENT.

(590) **CEGR 5090. Special Topics in Civil Engineering. (1-4) (1-4G)** Study of specific new areas emerging in the various fields of civil engineering. May be repeated for credit. *(On demand)*

(538) **CEGR 5108. Finite Element Analysis and Applications. (3) (3G)** Prerequisite: consent of instructor. Finite element method and its application to engineering problems. Application of displacement method to plane stress, plane strain, plate bending and axisymmetrical bodies. Topics include but are not limited to dynamics, heat transfer, fluid mechanics, structural mechanics, and electric fields. (Dual-listed with MEGR 5108.) *(Spring)*

(522) **CEGR 5122. Advanced Topics in Structural Steel. (3) (3G)** Prerequisites: CEGR 4222 or consent of instructor. Theory of plastic-behavior of steel structures; current topics in structural steel. *(On demand)*

(528) **CEGR 5128. Matrix Methods of Structural Analysis. (3) (3G)** Prerequisite: consent of instructor. Derivation of the basic equations governing linear structural systems. Application of stiffness and flexibility methods to trusses and frames. Solution techniques utilizing digital computer. *(On demand)*

(544) **CEGR 5144. Engineering Hydrology. (3) (3G)** Prerequisite: consent of instructor. A quantitative study of the various components of the water cycle, including precipitation, runoff, ground water flow, evaporation and transpiration, stream flow. Hydrograph analysis, flood routing, frequency and duration, reservoir design, computer applications. *(On demand)*

(546) **CEGR 5146. Engineering Hydraulics. (3) (3G)** Prerequisite: consent of instructor. Problems of fluids as applied in civil engineering; open channel flow; dams and spillways; water power; river flow and backwater curves; pipe networks, fire flow, sewage collection, groundwater, and computer applications. *(On demand)*

(561) **CEGR 5161. Advanced Traffic Engineering. (3) (3G)** Prerequisite: CEGR 3161 or consent of instructor. Analysis of basic characteristics of drivers, vehicles and roadway that affect the performance of road systems. Stream flow elements, volume, density, speed. Techniques of traffic engineering measurements, investigations and data analysis, capacity analysis. Intersections, accidents, parking. *(On demand)*

(565) **CEGR 5165. Urban Systems Engineering. (3) (3G)** Prerequisite: CEGR 3372 or consent of instructor. Survey of economic, political, sociological and technological factors affecting modern growth; a planning process and its role in solving selected urban problems with emphasis on engineering contributions. *(On demand)*

(592) **CEGR 5892. Individualized Study and Projects. (1-6) (1-6G)** Prerequisite: consent of the Department. Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

**CEGR 5991. Graduate Research in Civil Engineering. (1-4) (1-4G)** Prerequisite: consent of the Department. Independent study of a theoretical and/or experimental problem in a specialized area of civil engineering. May be repeated for credit. *(On demand)*

**Courses for Graduate Students Only**

(690) **CEGR 6090. Special Topics in Civil Engineering. (1-6G)** Directed study of current topics of special interest. May be repeated for credit. *(On demand)*

(629) **CEGR 6129. Structural Dynamics. (3G)** Prerequisite: consent of instructor. Analysis and design of structures subject to dynamic and static loading, single degree of freedom approach, vibration of structural components including damping and elasto-plastic behavior. *(On demand)*

(641) **CEGR 6141. Stream Pollution Analysis. (3G)** Prerequisite: consent of instructor. Mathematical modeling of water quality in receiving streams including: generation of point and nonpoint sources of pollution; formulation of transport equations for contaminants in stream and estuarine water; and prediction of the fate, persistence and transformation of chemical pollutants in aquatic ecosystems. Computer model simulation and case studies. *(On demand)*

(661) **CEGR 6161. Traffic Control and Operation. (3)** Prerequisite: CEGR 5161 or consent of instructor. Traffic control theory and application; traffic regulation, laws and ordinances; speed control, intersection control, flow control and parking control; design and application of control devices, investigation, evaluation techniques; statistical analysis; administration. *(On demand)*

(671) **CEGR 6171. Air Quality Control. (3G)** Prerequisite: consent of instructor. Study of various types of air pollutants, their sources, nature and effects. Examination of air quality criteria, standards and monitoring. Analysis of feasibility, applicability and efficiency of diverse systems of control. Evaluation of goal and research needs in the future. *(On demand)*

(681) **CEGR 6181. Traffic Flow Theory. (3G)** Prerequisite: CEGR 5161 or consent of instructor. Logical foundations and mathematical representation of traffic flow; interrelation between microscopic and macroscopic equations of motion for highway traffic; stochastic properties of traffic at low and moderate densities. Car-following theories of traffic flow at high densities. Applications of queuing theory to transportation. *(On demand)*

(682) **CEGR 6182. Transportation Systems Analysis. (3G)** Prerequisite: CEGR 5161 or consent of instructor. Issues, concepts and methods of transportation systems engineering and planning. Decision making in transportation management. The application of analytical methods to the development and evaluation of transport systems. *(On demand)*

(692) **CEGR 6892. Individualized Study and Projects. (1-6G)** Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

(691) **CEGR 6991. Graduate Thesis Research. (1-6G)** Individual investigation culminating in the preparation and presentation of a thesis. May be repeated for credit. *(On demand)*

## ELECTRICAL ENGINEERING (EEGR)

FOLLOWING ARE COURSES DESIGNED PRIMARILY FOR ADVANCED UNDERGRADUATES WHICH CARRY GRADUATE CREDIT. FOR COMPLETE COURSE DESCRIPTIONS, SEE PAGES 292-293.

(411) **EEGR 4111. Control Systems Theory I. (3) (3G)**

(412) **EEGR 4112. Control Systems Theory II. (3) (3G)**

(313) **EEGR 4113. Modeling and Analysis of Dynamic Systems. (3) (3G)**

(314) **EEGR 4114. Topological Aspects of Circuit Theory. (3) (3G)**

(422) **EEGR 4121. Antennas. (3) (3G)**

(426) **EEGR 4122. Acoustics. (3) (3G)**

(435) **EEGR 4131. Linear Integrated Electronics. (3) (3G)**

(411) **EEGR 4141. Power System Analysis I. (3) (3G)**

(442) **EEGR 4142. Power System Analysis II. (3) (3G)**

(443) **EEGR 4143. Electrical Machinery. (3) (3G)**

(486) **EEGR 4182. Digital System Testing. (3) (3G)**

**Courses for Graduate Students and Advanced Undergraduates**

THE 5000-LEVEL COURSES ARE FIRST-YEAR GRADUATE COURSES ALTHOUGH SOME ADVANCED SENIORS MAY ENROLL WITH PERMISSION OF THE DEPARTMENT.

(590) **EEGR 5090. Special Topics. (1-6) (1-6G)** Directed study of current topics of special interest. May be repeated for credit. *(On demand)*

(561) **EEGR 5101. Advanced Computer Utilization. (3) (3G)** Prerequisite: consent of the Department. The use of computers in large scale engineering problems. Topics include flow diagrams, matrix analysis of systems, applications of iteration methods to non-linear problems, eigenvalue problems, optimization and handling of large engineering data base problems. Engineering applications will be emphasized. *(On demand)*

(583) **EEGR 5102. Engineering Simulation. (3) (3G)** Prerequisite: EEGR 3101 or consent of the Department. A wide range of simulation related topics will be introduced including the theory of simulation, characteristics of simulators, and trade-offs in simulation studies. Continuous and discrete simulation with primary emphasis on application of simulation techniques to engineering problems. Simulation of actual problems based on students' interest and experience areas. *(On demand)*

(585) **EEGR 5103. Applied Computer Graphics. (3) (3G)** Prerequisite: permission of the Department. Interactive graphics; raster, character, vector, graphics, display technologies; rotation, scaling, translating of graphics image; image processing/enhancement; feature extraction; 3-D graphics; hidden lines. *(On demand)*

(541) **EEGR 5104. Computational Methods in Power Systems. (3) (3G)** Prerequisite: EEGR 4142 or permission of the Department. Numerical techniques for analysis, operation and planning of power systems. Sparse matrix techniques applied to power flow algorithms. Economic operation of power systems. Optimum power flow. *(On demand)*

(511) **EEGR 5111. Control Systems. (3) (3G)** Prerequisite: consent of the Department. Mathematical models and characteristics of control systems. Performance and stability of linear feedback systems. Root locus and frequency response techniques. Stability in frequency domain. Time domain analysis. Design and compensation of control systems. Credit will not be given for EEGR 5111 where credit has been given for EEGR 4111. *(Fall) (Evenings)*

(513) **EEGR 5112. Nonlinear Analysis. (3) (3G)** Prerequisite: EEGR 3112. Solution of nonlinear problems using numerical and graphical methods, phase plane plots, analysis of singular points and analytical techniques. Forced oscillating systems. Stability of nonlinear systems. Use of analog and digital computer to study nonlinear problems. *(On demand)*

(514) **EEGR 5113. Network Synthesis. (3) (3G)** Prerequisite: EEGR 4114 or equivalent. The positive real concept, properties and methods of testing. Realizability conditions on driving point functions. Methods of synthesis of one-port. Physical realizability and properties of two-port networks. Transfer function synthesis. Approximation methods. *(On demand)*

(534) **EEGR 5114. Device Characterization, Parameterization and Modeling. (3) (3G)** Prerequisite: EEGR 3132 and ESGR 4134 or permission of the Department. Advance device and circuit analysis; device and circuit simulation using SPICE, ECAP or equivalent. Parametric modeling of active devices. Device characterization and parameterization; temperature effects; thermal cycling. Analysis of device failure modes. *(On demand)*

(533) **EEGR 5121. Communications Theory I. (3) (3G)** Prerequisite: EEGR 3112. Information transmission and modulation systems. Analysis of transmission through electric networks, analysis and comparison of modulation systems, analog and digital communication systems. Introduction to information theory, sampling theory and noise. Introduction to statistical communications theory. *(Fall) (Evenings)*

**EEGR 5123. Advanced Electromagnetic Field Theory. (3) (3G)** Prerequisite: EEGR 3122 or permission of the Department. Maxwell's equations and propagation. Properties of guided and surface waves. Wave properties of light; physical and fiber optics. *(On demand)*

(532) **EEGR 5132. Integrated Circuit Electronics. (3) (3G)** Topics include electrical transducers and instrumentation amplifiers, active filters, signal conditioning and analog processing, data coversion, process control, electronic power supplies, reliability, noise and low-level signal processing. *(On demand)*

(535) **EEGR 5133. VLSI Systems Design. (3) (3G)** Prerequisite: EEGR 3131 or permission of the Department. Techniques for analysis and design of very large scale integrated circuits. Comparison with conventional techniques. Regularity and synthesis. A project-oriented course relying heavily on computer-aided design. *(Fall) (Evenings)*

**EEGR 5134. Advanced VLSI Systems Design. (3G)** Prerequisite: EEGR 5133. A project-oriented course dealing with advanced topics in VLSI systems design and analysis such as circuit design techniques, array structures, performance estimation, automated routing, and device electronics. *(Spring)*

(531) **EEGR 5135. Physical Electronics. (3) (3G)** Prerequisite: EEGR 3122 or PHYS 3181 or permission of the Department. Dynamics of charged particles; electron motion in electromagnetic fields; types of electron emission; beam focusing; longitudinal and transverse beam waves; microwave generation; plasma parameters. *(On demand)*

**EEGR 5137. Device Electronics for Integrated Circuits. (3) (3G)** Prerequisites: EEGR 3132 and ESGR 4134, or permission of the Department. The basic operating principles of electronic devices in integrated circuits are treated. The physical models of these devices are discussed. Graduate students are required to carry out laboratory experimentation. *(Fall) (Evenings)*

**EEGR 5139. Digital Communication Systems. (3) (3G)** Prerequisites: EEGR 2181 and 3131. Topics include digital data transmission systems, signal and system representation, digital system performance characterization, pulse code modulation, and statistical communications theory. *(On demand)*

(542) **EEGR 5141. Unsymmetrical Analysis of Power Systems. (3) (3G)** Prerequisite: EEGR 4142 or permission of the Department. Application of symmetrical components to the calculation of overcurrents and overvoltages during unsymmetrical faults. Characterization of generators, transformer banks and transmission lines for unsymmetrical analysis. Methods for grounding the system neutral. *(On demand)*

**EEGR 5142. Power System Generation. (3) (3G)** Prerequisite: EEGR 4142 or permission of the Department. Characteristics of power generation units, steam, nuclear reactor and hydroelectric. Economic and thermal system dispatch. Transmission losses, load flow problems. Hydro scheduling, hydro-plant models. Energy production cost models. Interchange evaluation. *(Fall) (Alternate years) (Evenings)*

**EEGR 5143. Power System Analysis. (3) (3G)** Prerequisite: EEGR 4142 or permission of the Department. Large-scale systems state descriptions and hierarchical control. State space models, dynamic stability and testing. Stability of simple and multi-machine systems. Transient phenomena in electrical power systems. Transient stability problem. *(Spring) (Alternate years) (Evenings)*

(536) **EEGR 5181. Computer Arithmetic. (3) (3G)** Prerequisite: permission of the Department. Principles, architecture and design of fast two operand adders, multi-operand adders, standard multipliers and dividers. Cellular array multipliers and dividers. Floating point processes, BCD and excess three adders, multipliers and dividers. *(On demand)*

(592) **EEGR 5892. Individualized Study. (1-6) (1-6G)** Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

**Courses for Graduate Students Only**

(623) **EEGR 6021. Advanced Topics in EM and Applications. (3G)** Prerequisite: permission of the Department. Possible topics include: advanced boundary value problems; nonlinear magnetic materials; wave guides and resonant cavities; magnetohydrodynamics and plasmas; relativistic effects; charged particle dynamics; radiation. *(On demand)*

(690) **EEGR 6090. Special Topics. (1-6G)** Directed study of current topics of special interest. May be repeated for credit. *(On demand)*

(685) **EEGR 6101. Advanced Computer Graphics. (3G)** Prerequisites: EEGR 5103 and 5133 or permission of Department. A project-oriented course using and developing techniques of CAD/CAM graphics, hardware and software development. Advanced application of graphics in computer-aided systems design. *(On demand)*

(661) **EEGR 6102. Optimization of Engineering Designs. (3G)** Prerequisite: EEGR 5101 or consent of Department. The development of computationally feasible algorithms for solving optimization problems in engineering designs. Introduction to non-linear programming methods; study of constrained and unconstrained problems, linear programming problems and other related topics. *(On demand)*

(611) **EEGR 6111. Systems Theory. (3G)** Prerequisite: EEGR 4112 or consent of Department. State space concepts and solutions. Introduction to theory of deterministic linear systems. Application of matrix methods and vector difference equations to lumped parameter electrical mechanical and fluid systems, and discrete time systems. Frequency domain techniques in signal and systems analysis. Computer simulation of system dynamics. *(Fall) (Evenings)*

(619) **EEGR 6112. Digital Control Systems. (3G)** Prerequisites: EEGR 6111 and 4181 or consent of the Department. Time-domain and Z-domain analysis of linear discrete systems, open and closed loop sampled data systems, engineering characteristics of computer control systems, simulation of system dynamics. *(Spring) (Alternate years)*

(662) **EEGR 6113. Digital Signal Processing I. (3G)** Prerequisite: EEGR 4112 or consent of the Department. Topics include complex variables, phasors, digital signals and systems. Fourier transform of digital signals, digital filters, Kepstrum FFT, random processes, spectral estimation, deconvolution. *(Fall) (Alternate years)*

**EEGR 6114. Digital Signal Processing II. (3G)** Prerequisite: EEGR 6113 or permission of the Department. Discrete Hilbert Transforms, discrete random signals, effect of finite register length in digital and signal processing, speech processing, radar and other applications. *(Spring) (Alternate years) (Evenings)*

**EEGR 6115. Optimal Control Theory I. (3G)** Prerequisite: EEGR 6111 or permission of the Department. Optimum control and continuous-time and discrete time systems. The Maximum Principle and Hamilton Jacobi Theory. Theory of optimal regulator, state estimation and Kalman Bucy Filter. Combined estimation and control—the Linear Quadratic Gaussian Problems. Computational methods in optimum control systems. *(Fall) (Alternate years) (Evenings)*

**EEGR 6116. Optimal Control Theory II. (3G)** Prerequisite: EEGR 6115 or permission of the Department. A continuation of EEGR 6115 with emphasis on stochastic systems. Optimal filtering. Discrete-time Kalman filter and Kalman filter properties. Parameter identification. Multivariable control systems, system sensitivity and robustness. *(Spring) (Alternate years) (Evenings)*

**EEGR 6117. Applied Artificial Intelligence. (3G)** Prerequisites: EEGR 6111 and CSCI 5150. Problem of creating intelligent behavior in machines, emphasizing computer-oriented approaches; practical applications such as machine aids to human problem-solving and computer control of external manipulators; current developments. *(On demand)*

**EEGR 6118. Applied Digital Image Processing. (3G)** Prerequisite: EEGR 6113. Digital image fundamentals; comparison of image transforms including Fourier, Walsh, Hadamard and Cosine; image data compression techniques; image enhancement algorithms; image restoration; image encoding process; image segmentation and description; relationship of hardware restrictions to image fidelity. *(On demand)*

**EEGR 6121. Advanced Theory of Communications I. (3G)** Prerequisite: introductory probability course or permission of the Department. Statistical communications theory and modern communications systems emphasizing modulation and methods of taking into account the effects of noise on various systems. *(Fall) (Alternate years) (Evenings)*

**EEGR 6122. Advanced Theory of Communications II. (3G)** Prerequisite: EEGR 6121 or permission of the Department. Continuation of EEGR 6121 including coding and decoding methods. Wave form communications. Applications. *(Spring) (Alternate years) (Evenings)*

(631) **EEGR 6131. Hybrid Microelectronics. (3G)** Prerequisite: EEGR 5132 or permission of the Department. A project-oriented course involving design, bonding, interconnect and testing of a multidie hybrid microelectronics circuit. Emphasis placed upon use of I.C.'s of various technologies in these designs to optimize performance. *(On demand)*

**EEGR 6132. Advanced Semiconductor Device Physics. (3G)** Prerequisite: EEGR 5137 or permission of the Department. A review of semiconductor physics, bipolar and unipolar devices, photonic devices and methods of measuring specific device characteristics. *(Spring)*

**EEGR 6133. MOS Physics and Technology. (3G)** Prerequisite: EEGR 6132 or permission of the instructor. The theoretical and practical aspects of the metal oxide semiconductor (MOS) system, its electrical properties, and the measurement and the technology for their control. These topics are developed from simple beginnings to the current state of the art. *(Fall)*

(643) **EEGR 6141. Power System Relaying. (3G)** Prerequisite: EEGR 5141 or permission of the Department. Function and principles of protective relaying instrument transformers. Directional, distance and differential relays. Protection of generators, transformers, and transmission lines. Ground fault protection. Computer relaying, algorithms for protective relaying. *(On demand)*

(644) **EEGR 6142. Voltage Transients and Surge Protection. (3G)** Prerequisite: EEGR 5141 or permission of the Department. Overvoltages due to lightning and switching surges. Traveling waves on transmission lines. Surge arrestors, insulation coordination. Surge protection of transmission lines, substations and rotating machine. Shielding and grounding. *(On demand)*

(645) **EEGR 6143. Power System Control. (3G)** Prerequisites: EEGR 4142 and 4111 or permission of the Department. Computer functions for automatic control of power systems. Automatic generation control, regulation of frequency and tie-line power interchanges. Automatic voltage regulation, excitation system model. Power system dynamics. Computer control centers. *(On demand)*

(641) **EEGR 6144. Operation of Integrated Power Systems. (3G)** Prerequisite: EEGR 4142 or consent of department. System modeling and matrix analysis of power networks. Application of computers to the solution of a variety of problems related to operation, planning and design of electric power systems. *(On demand)*

(642) **EEGR 6145. Control of Integrated Power Systems. (3G)** Prerequisite: EEGR 4142 or permission of department. Analysis and simulation of power system components. Study of transient and control problems associated with interconnected power systems and techniques of analysis. Practical methods applied to analysis of large systems. *(On demand)*

(652) **EEGR 6151. Advanced Microelectronics Projects. (3G)** Prerequisite: EEGR 5133. A project-oriented course intended for the advanced microelectronics student who wishes to pursue the testing and simulation at various levels (component, gate, cell and system), as well as the design of a significant VLSI implementation. *(On demand)*

(681) **EEGR 6181. Switching and Automata Theory I. (3G)** Prerequisite: consent of Department. Topics include sets, relations, lattices, Boolean algebras; functional decomposition and symmetric functions; threshold logic; multiple-value logic; fault detection and fault tolerant design; finite state machines, incompletely specified machines, minimization; state identification and fault-detection experiments; finite state recognizers. *(On demand)*

(682) **EEGR 6182. Switching and Automata Theory II. (3G)** Prerequisite: EEGR 6181 or permission of the Department. Advanced topics in the area of switching and automata theory. Topics typically chosen to accommodate student and instructor interest; may include tesselation automata, pushdown/linear-bounded/and turing automata (and the formal languages each accepts), computability and testability, digital system architecture, binary and non-binary switching theory, and related areas. *(On demand)*

(683) **EEGR 6183. Multiprocessor Systems Design. (3G)** Prerequisites: EEGR 3184 and 5131. Topics include applications of multiprocessors to digital systems design; hardware/software tradeoff considerations; master/slave, multiple/master and loosely coupled systems; data handling and synchronization problems, networking. *(On demand)*

(680) **EEGR 6184. Computer System Engineering. (3G)** Prerequisite: consent of the Department. Topics include data formats, register transfer operations, computer organization, microprogram control and ALU design. Arithmetic algorithms, I/O organization and memory organization are also covered. Specific emphasis is placed throughout on tradeoffs between hardware and software. *(On demand)*

**EEGR 6185. Advanced Microprocessor-Based Design. (3G)** Prerequisite: CSCI 4185 or permission of the Department. An advanced course in computer design utilizing 16-bit microprocessors. Architecture, software, and interface techniques. This course is project-oriented, involving the use of a logic analyzer. *(Fall) (Evenings)*

**EEGR 6186. Fault Testable Hardware Design. (3G)** Prerequisite: EEGR 4182 or permission of the Department. Test generation using the D-algorithm and PODEM; partitioning; scan design, built-in tests, logic system testing using a RTL; and fault tolerance. This course is project-oriented involving the use of a logic analyzer and test simulator. *(Spring) (Evenings)*

(692) **EEGR 6890. Individualized Study and Projects. (1-6G)** Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

(691) **EEGR 6991. Graduate Thesis Research. (0-6G)** Individual investigation culminating in the preparation and presentation of a thesis. May be repeated for credit. *(On demand)*

## ENGINEERING SCIENCE (ESGR)

FOLLOWING ARE COURSES DESIGNED PRIMARILY FOR ADVANCED UNDERGRADUATES WHICH CARRY GRADUATE CREDIT. FOR COMPLETE COURSE DESCRIPTIONS, SEE PAGE 312.

(461) **ESGR 4131. Solid State Transformations. (3) (3G)**

(434) **ESGR 4134. Solid State Electronics. (3) (3G)**

(562) **ESGR 4162. Materials Production and Process. (3) (3G)**

(465) **ESGR 4165. Introduction to Nondestructive Evaluation Methods. (3) (3G)**

**Courses for Graduate Students and Advanced Undergraduates**

THE 5000-LEVEL COURSES ARE FIRST-YEAR GRADUATE COURSES ALTHOUGH SOME ADVANCED SENIORS MAY ENROLL WITH PERMISSION OF THE DEPARTMENT.

(590) **ESGR 5090. Special Topics. (1-6) (1-6G)** Directed study of current topics of special interest. May be repeated for credit. *(On demand)*

(502) **ESGR 5102. Introduction to Continua. (3) (3G)** Prerequisites: MEGR 3111, EEGR 3121, ESGR 3141 and MEGR 3114 or consent of instructor. A unified treatment of those topics which are common to all continua. Stress, deformation and velocity fields, constitutive equations and field equations. Representative applications in solid, fluid and electromagnetic continua, including interaction problems. *(On demand)*

(513) **ESGR 5114. Energy Conversion II. (3) (3G)** Prerequisites: MEGR 3112 and 4111. Study of conversion of heat into power. Thermoelectric, magnetohydrodynamic engines, thermionic converters, solar and fuel cells. *(Alternate years)*

(532) **ESGR 5132. Quantum and Parametric Electronics. (3) (3G)** Prerequisite: EEGR 3122 or PHYS 3131 or consent of instructor. Quantum mechanics; spin energy levels; elementary masers, optical resonance; traveling wave tubes; backward wave oscillators. *(Alternate years)*

(561) **ESGR 5161. Atomic Processes in Solids. (3) (3G)** Prerequisite: ESGR 4131 or consent of the Department. Processes dependent on large- and small-scale atomic motions leading to changes in material structures and properties. Theories of diffusion controlled and diffusionless transformations. Modern concepts in structure and property control. *(On demand)*

(564) **ESGR 5164. Diffraction and Spectroscopic Studies of Matter. (3) (3G)** Prerequisite: senior or graduate standing and consent of instructor. Atomic arrangements in crystalline and non-crystalline forms of matter. Symmetry properties of crystals. Treatment of diffraction theory and experimental methods. X-ray diffraction and spectroscopic analysis of matter. *(Alternate years)*

(592) **ESGR 5892. Individualized Study and Projects. (1-6) (1-6G)** Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

**Courses for Graduate Students Only**

(690) **ESGR 6090. Special Topics. (1-6G)** Directed study of current topics of special interest. May be repeated for credit. *(On demand)*

(615) **ESGR 6101. Transport Processes. (3G)** Prerequisite: consent of instructor. Unified field theory approach to the fluid transport of momentum, energy, mass and electrical charge. Statistical theories of turbulence and molecular transport. Multiphase systems, chemically reacting flows, ionized fluids, separation processes. *(On demand)*

(616) **ESGR 6102. Separation Processes. (3G)** Prerequisite: consent of instructor. Theory of stagewise and continuous separation processes. Applications include distillation, extraction, absorption and thermal diffusion. *(On demand)*

(617) **ESGR 6103. Chemical Reaction Engineering. (3G)** Prerequisite: consent of instructor. Theory and design of batch and flow chemical reactors. *(On demand)*

(618) **ESGR 6104. Nuclear Reactor Theory. (3G)** Prerequisite: consent of instructor. Neutron transport theory applied to the engineering design of nuclear reactors. Generation, diffusion and slowing down of neutrons. Nuclear ballistics and collision phenomena. Reactor kinetics and thermodynamics. Homogenous and heterogenous reactors. *(On demand)*

(666) **ESGR 6166. Deformation and Fracture of Materials. (3G)** Prerequisite: consent of instructor. Macroscopic and microscopic aspects of elastic and plastic deformation and fracture; applications of dislocation theory to an interpretation and control of mechanical properties; temperature, strain rate and texture effects. *(On demand)*

(691) **ESGR 6892. Individualized Study and Projects. (1-6G)** Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

(692) **ESGR 6991. Graduate Thesis Research. (1-6G)** Individual investigation culminating in the preparation and presentation of a thesis. May be repeated for credit. *(Fall, Spring)*

## MECHANICAL ENGINEERING (MEGR)

FOLLOWING ARE COURSES DESIGNED PRIMARILY FOR ADVANCED UNDERGRADUATE STUDENTS WHICH CARRY GRADUATE CREDIT. FOR COMPLETE COURSE DESCRIPTIONS, SEE PAGE 314.

(411) **MEGR 4111. Heat Transfer. (3) (3G)**

(442) **MEGR 4112. Intermediate Fluid Mechanics. (3) (3G)**

(412) **MEGR 4113. Energy Conversion I. (3) (3G)**

(415) **MEGR 4143. Mechanical Vibrating Systems. (3) (3G)**

(444) **MEGR 4144. Intermediate Dynamics. (3) (3G)**

**Courses for Graduate Students and Advanced Undergraduates**

THE 5000-LEVEL COURSES ARE FIRST-YEAR GRADUATE COURSES ALTHOUGH SOME ADVANCED SENIORS MAY ENROLL WITH PERMISSION OF THE DEPARTMENT.

(590) **MEGR 5090. Special Topics. (1-6) (1-6G)** Directed study of current topics of special interest. May be repeated for credit. *(On demand)*

**MEGR 5108. Finite Element Analysis and Applications. (3) (3G)** Prerequisites: MEGR 5141 and MATH 6171 or permission of the Department. An introduction to the finite element method and its application to engineering problems. Application of the displacement methods to plane stress, plane strain, plate bending and axisymmetrical bodies. Topics may include but are not limited to: dynamics, heat conduction, and structural mechanics. (Dual-listed with CEGR 5108). *(Spring)*

(511) **MEGR 5111. Advanced Engineering Thermodynamics. (3) (3G)** Prerequisites: MEGR 3112 and MATH 3142. Postulational treatment of the laws of thermodynamics. Equilibrium and maximum entropy postulates. Development of formal relationships and principles for general systems. Applications to chemical, magnetic, electric, and elastic systems. *(On demand)*

(514) **MEGR 5113. Dynamics and Thermodynamics of Compressible Flow. (3) (3G)** Prerequisites: MEGR 3111 and 3114. Compressible flow equations, isentropic flow, normal shock waves, Fanno and Raleigh line flows. Nonsteady one dimensional flow. *(Alternate years)*

(518) **MEGR 5118. Thermal Environmental Engineering. (3) (3G)** Prerequisite: MEGR 4111. Application of the thermodynamic and heat transfer principles to the analysis of thermal environmental systems. Topics include thermodynamic properties of moist air, psychometric charts, transfer processes, heating and cooling of moist air, coils, physiological effects of thermal environments, food processing and storage. *(Alternate years)*

(521) **MEGR 5121. Mechanism Analysis. (3) (3G)** Prerequisite: MEGR 3221 or consent of the Department. Analysis of coplanar and spatial mechanisms, application of matrix methods in analysis of mechanisms, mobility analysis of mechanisms, rigid body guidance, computer aided analysis of mechanisms. *(Spring) (Evenings)*

(525) **MEGR 5125. Vibrations. (3) (3G)** Prerequisite: MEGR 4143 or consent of the Department. Vibration of linear, discrete multiple degree of freedom systems: natural frequency normal modes, principal coordinates, forced oscillations and damping. Approximate methods: iteration, Rayleigh-Ritz, Galerkin, etc. Applications may include buildings, structures, power transmission lines, turbines, etc. *(Alternate years)*

(527) **MEGR 5127. Computer-Aided Manufacturing. (3) (3G)** Prerequisites: MEGR 3253 and consent of the Department. Topics covered include flowline production, numerical control, computer aided process monitoring and control, group technology, flexible manufacturing, and material requirement planning. *(Alternate years)*

(528) **MEGR 5128. Industrial Robotics. (3) (3G)** Prerequisites: MEGR 3125 and 3126. Basic working principles of robots in industrial processes; transformations and A matrices in manipulators; kinematics, dynamics and control of robots; artificial intelligence and vision in robots; design of robots. *(Alternate years)*

**MEGR 5141. Theory of Elasticity I. (3) (3G)** Prerequisite: MEGR 3221 or equivalent. Introduction to the theory of elastic media; the fundamentals of stress, strain, stress-strain relationships, compatibility and equilibrium. Applications to two- and three-dimensional problems. Structural mechanics and energy methods. *(Alternate years)*

(546) **MEGR 5146. Experimental Stress Analysis. (3) (3G)** Prerequisite: MEGR 5141 or consent of the Department. Theoretical and experimental techniques of stress and strain analysis, with experimental emphasis on strain gages and instrumentation. Brittle coatings and photoelasticity are also considered. Two lectures and a two-hour lab per week. *(Alternate years)*

(592) **MEGR 5892. Individualized Study and Projects. (1-6) (1-6G)** Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

**Courses for Graduate Students Only**

(690) **MEGR 6090. Special Topics. (1-6G)** Directed study of current topics of special interest. May be repeated for credit. *(On demand)*

(616) **MEGR 6111. Convective Heat Transfer. (3G)** Prerequisites: MEGR 4111 and 4112. Heat and momentum transfer prediction in channel flows and boundary layers. Differential equation methods for fully developed and entry length laminar tube flows. Similarity solutions for laminar heat transfer. Superposition methods for non-uniform boundary conditions. Integral equations of the boundary layer, approximate and semiempirical methods of solution. *(Alternate years)*

(612) **MEGR 6112. Radiative Heat Transfer. (3G)** Prerequisite: MEGR 4111. Fundamentals of radiation heat transfer, analysis of gray body and wavelength dependent systems; radiation from gases at high temperature, and particulate-laden gases; combined radiation and conduction. *(On demand)*

(614) **MEGR 6113. Advanced Conductive Heat Transfer. (3G)** Prerequisite: MEGR 4111. Theory of steady and unsteady heat conduction in isotropic and anistropic media. Treatment of concentrated and distributed heat sources. Application of the finite difference and finite element methods. *(Alternate years)*

(610) **MEGR 6114. Advanced Fluid Mechanics. (3G)** Prerequisite: MEGR 4112 or consent of the Department. Unified tensorial-theoretical treatment of the transport of mass, momentum, energy and vorticity in fluids. General theorems for inviscid and irrotational flows. Viscous effects, boundary layer theory, nonlinear phenomena, hydrodynamic instability and turbulence with applications. *(On demand)*

(620) **MEGR 6120. Bearing Design and Lubrication. (3G)** Prerequisite: MEGR 3222 or consent of the Department. Hydrodynamic lubrication, fluid film and rolling element bearings, design and control of gas and fluid lubricated bearings. *(On demand)*

(621) **MEGR 6121. Mechanism Synthesis. (3G)** Prerequisite: MEGR 5121 or consent of the Department. Synthesis of coplanar and spatial mechanisms, number and type synthesis, function generator, path generator, optimal synthesis of mechanisms, case studies in optimal design of mechanisms. *(Alternate years)*

(623) **MEGR 6123. Mechanical Design. (3G)** Prerequisite: MEGR 5141 or consent of the Department. Impact loading on critical sections, fatigue consideration, stress concentration, fluctuating stresses, failure analysis, contact stresses, industrial case studies. *(On demand)*

(648) **MEGR 6126. Dynamics of Machinery. (3G)** Prerequisite: MEGR 3222 or consent of the Department. Application of dynamics of machinery, balancing of rigid and flexible rotors. Dynamics of spatial mechanisms. Computer-aided dynamic analysis of machinery. *(On demand)*

**MEGR 6141. Theory of Elasticity II. (3G)** Prerequisites: MEGR 5141 and MATH 6172. Continuation of MEGR 5141 with additional topics in three-dimensional analyses. Topics include complex variable techniques, variational methods and numerical techniques. *(On demand)*

(641) **MEGR 6142. Inelastic Behavior of Materials. (3G)** Prerequisite: MEGR 5141 or consent of the Department. Introduction to plasticity and linear viscoelasticity. Topics include a study of yield criteria, plastic stress-strain relations, plastic hinge analysis, discrete viscoelastic models, the hereditary integral and selected boundary value problems. *(Alternate years)*

(645) **MEGR 6145. Advanced Topics in Dynamics. (3G)** Prerequisite: consent of the Department. Selected advanced topics in dynamics such as Lagrangian dynamics, vibrations of continuous media, stress wave propagation and motion measurement. *(On demand)*

(698) **MEGR 6892. Individualized Study and Projects. (1-6G)** Individual investigation and exposition of results. May be repeated for credit. *(On demand)*

(699) **MEGR 6991. Graduate Thesis Research. (1-6G)** Individual investigation culminating in the preparation and presentation of a thesis. May be repeated for credit. *(Fall, Spring)*

# English

*Degree:* M.A. *Coordinator:* Sarah Smedman

## MASTER OF ARTS DEGREE IN ENGLISH

The Master of Arts degree program in English is designed to accommodate students seeking a Master of Arts degree with or without graduate certification in teaching. The program is flexible enough that it can serve the particular needs of the individual student, whether used for general education and enhanced knowledge and understanding, for personal pleasure, for professional advancement, or for further preparation for teaching at the primary or secondary level, or two-year or four-year college level. The student may pursue a broad spectrum of literature, writing, and language; or the student may concentrate in a particular field or area, such as linguistics, writing, American literature, British literature, modern literature, etc. A program for certification in teaching English as a second language also is available.

**Degree Requirements.** The program requires a minimum of 30 semester hours of acceptable graduate credit, 15 of which must be for English courses open only to graduate students. Of the 30 hours of graduate credit, 27 hours (six of which may be applied to a thesis if that option is taken) must be for English courses. Three hours of electives may be taken in a related area (e.g., in history, education, etc.) on the graduate level. No more than six hours of English 6890 (Directed Reading) may be applied to the degree without written permission of the Chair. Those students who already have an "A" teacher's certificate and who wish to obtain a "G" certificate at the completion of the degree must have six hours of graduate credit in Education, three hours of which can be part of the minimum 30 hours for the M.A. in English (for a total of 33 hours). Graduate courses in English can be applied toward subject matter requirements for an "A" certificate, but courses so used cannot also be applied toward subject matter requirements for a "G" certificate.

The English courses offered for the degree must include the following: at least three hours in language, linguistics, rhetoric or writing; at least three hours in American literature; at least three hours in British literature before 1800; and at least three hours in British literature after 1800 (English 6125 may be used for this).

While a thesis is not required for the degree, those students wishing to write one may do so (see the course description for English 6996).

Courses beyond 30 semester hours of graduate credit may be required to remove deficiencies or to satisfy requirements for graduate certification, or may be recommended to develop areas of need, to pursue particular interests, or to gain needed experience.

Up to six semester hours of appropriate graduate credit may be accepted for transfer from another accredited institution.

**Program Approval.** Approval of the program of each student and advice regarding progress toward the degree will be the responsibility of advisers appointed by the Department of English at the time of the student's admission. More detailed information about requirements and procedures can be obtained by contacting the English Department.

**Examination.** Each student must satisfactorily complete a comprehensive examination (including both written and oral segments) for the degree. The written examination may not be attempted sooner than three weeks after all English courses for the degree are completed.

**Awards.** The Department gives two graduate awards each spring to graduate students who have completed their degrees: the Ethel Katopodis Award for excellence in the study of English and the Anne R. Newman Award for excellence in the study of English.

**Graduate Assistants.** A number of graduate assistantships are available each year. Deadline for applications is early spring. Further information is available in the English Department.

**Loan Fund.** The Anne R. Newman Graduate Student Loan Fund was established in 1979 by graduates of the English Department's M.A. program in honor of teaching excellence in graduate studies by faculty of the Department. It is available to students seeking the Master of Arts degree within the English Department.

## COURSE DESCRIPTIONS

### ENGLISH (ENGL)

FOLLOWING ARE COURSES DESIGNED PRIMARILY FOR ADVANCED UNDERGRADUATES WHICH ARE AVAILABLE FOR GRADUATE CREDIT. IN COURSES AT THIS LEVEL, GRADUATE STUDENTS WILL BE EXPECTED TO DO ADDITIONAL WORK BEYOND THAT REQUIRED OF UNDERGRADUATES. SEE PAGES 122-124 FOR COMPLETE COURSE DESCRIPTIONS.

(402) **ENGL 4002. Women and Literature. (3) (3G)**

**ENGL 4008. Topics in Advanced Technical Communication. (3) (3G)**

(412) **ENGL 4112. Medieval British Literature. (3) (3G)**

(413) **ENGL 4113. British Prose and Poetry of the 16th Century. (3) (3G)**

(421) **ENGL 4121. The 18th-Century British Novel: Man, Woman, Manners and Morals. (3) (3G)**

(422) **ENGL 4122. The Victorian Novel. (3) (3G)**

(423) **ENGL 4123. The Modern British Novel. (3) (3G)**

(424) **ENGL 4124. Modern Irish Literature. (3) (3G)**

(431) **ENGL 4131. British Drama to 1600, Excluding Shakespeare. (3) (3G)**

(432) **ENGL 4132. British Drama From 1600 to 1642, Excluding Shakespeare. (3) (3G)**

(433) **ENGL 4133. British Drama of Wit and Intrigue, 1660-1780. (3) (3G)**

(441) **ENGL 4141. Colonial and Early American Literature. (3) (3G)**

(445) **ENGL 4145. Literature of the American South. (3) (3G)**

(450) **ENGL 4150. Contemporary Poetry. (3) (3G)**

(451) **ENGL 4151. Modern Drama. (3) (3G)**

(452) **ENGL 4152. Modern European Literature. (3) (3G)**

(453) **ENGL 4153. Contemporary Fiction. (3) (3G)**

(455) **ENGL 4155. Pan-African Literature. (3) (3G)**

(461) **ENGL 4161. Modern English Grammar. (3) (3G)**

(465) **ENGL 4165. Language and Culture. (3) (3G)**

**ENGL 4166. Comparative Language Studies for Teachers. (3) (3G)**

(470) **ENGL 4170. Approaches to Teaching English. (1-3) (1-3G)**

(601) **ENGL 4199. Bibliography and Methodology. (3) (3G)**

**ENGL 4202. Writing Poetry. (3) (3G)**

**ENGL 4203. Writing Fiction. (3) (3G)**

(305) **ENGL 4204. Expositiory Writing. (3) (3G)**

(406) **ENGL 4205. Advanced Expository Writing. (3) (3G)**

(405) **ENGL 4207. Writing Workshop. (3) (3G)**

(301) **ENGL 4210. Greek and Roman Drama In Translation. (3) (3G)**

(311) **ENGL 4211. Chaucer. (3) (3G)**

**ENGL 4221. The Earlier 17th Century. (3) (3G)**

**ENGL 4251. Literary Criticism Through Arnold. (3) (3G)**

(401) **ENGL 4252. Modern Literary Criticism. (3) (3G)**

(331) **ENGL 4260. History of the English Language. (3) (3G)**

(333) **ENGL 4263. Linguistics and Language Learning. (3) (3G)**

(400) **ENGL 4400. English Composition Practicum. (1-3) (1-3G)**

**Courses for Graduate Students**

(662) **ENGL 6062. Topics in Rhetoric. (3G)** Examination of and/or research concerning selected issues in rhetorical theory or pedagogy. May be repeated for credit with English Department approval. *(Fall, Spring, Summer) (Evenings)*

(670) **ENGL 6070. Topics in English. (3G)** Selected topics of literature and language. May be repeated for credit as topics vary and with English Department approval. *(Fall, Spring, Summer) (Evenings)*

(602) **ENGL 6102. Interpretations of Literature. (3G)** Demonstrations and practice in the various types of literary analysis. *(Alternate years) (Evenings)*

(603) **ENGL 6103. The Worlds of Juvenile Literature. (3G)** Poetry, folk literature, modern fantasy, realism, and illustrations in books for young children and adolescents. Analysis of the literary qualities which distinguish the classic from the ephemeral through such critical approaches as the historical, the sociological, the psychological and the archetypal. *(Yearly) (Evenings)*

(611) **ENGL 6111. Shakespeare's Comedies and Histories. (3G)** Source materials, textual problems and stage conventions in selected comedies and history plays illustrating Shakespeare's dramaturgy. *(Alternate years) (Evenings)*

(612) **ENGL 6112. Shakespeare's Tragedies. (3G)** Source materials, textual problems and stage conventions of the great tragedies, illustrating Shakespeare's dramaturgy. *(Alternate years) (Evenings)*

(613) **ENGL 6113. Milton. (3G)** The complete poetry and selections from the prose. *(On demand) (Evenings)*

(623) **ENGL 6123. The Augustan Age, 1660-1785. (3G)** Close reading of Dryden, Pope, Swift, Johnson, and a consideration of other literary figures and trends, in the light of intellectual and historical currents. *(On demand) (Evenings)*

(625) **ENGL 6125. The Romantic Era, 1785-1832. (3G)** Development of the Romantic movement, with emphasis on the works of Wordsworth, Coleridge and other major poets. *(Alternate years) (Evenings)*

(626) **ENGL 6126. The Victorian Era, 1832-1900. (3G)** Emphasis on Tennyson, Robert Browning, Arnold, Carlyle, Ruskin, Newman. *(Alternate years) (Evenings)*

(641) **ENGL 6141. American Romanticism. (3G)** Major writers of the 1830s, 40s, and 50s, including Hawthorne, Melville, Whitman, Emerson, Thoreau, and the Transcendental Movement. *(Alternate years) (Evenings)*

(642) **ENGL 6142. American Realism and Naturalism. (3G)** Major writers of the two movements before and after the end of the 19th century, including Twain, Howells, James, Crane, Dreiser, Norris. *(Alternate years) (Evenings)*

(643) **ENGL 6143. American Modernism. (3G)** Six to eight writers of the period since World War I, both prose and poetry. *(Alternate years) (Evenings)*

(647) **ENGL 6147. Perspectives in Afro-American Literature. (3G)** A survey of Afro-American literature, emphasizing the major authors, those relevant historical and social factors, and those specific literary movements that have influenced the development of Afro-American literature. *(Alternate years) (Evenings)*

(661) **ENGL 6161. Introduction to Linguistics. (3G)** Introduction to linguistics, its techniques and objectives, descriptive and historical approaches, language families, language and culture. *(Yearly) (Evenings)*

(695) **ENGL 6495. Internship in College Teaching. (3G)** Prerequisite: ENGL 4400 or 4204. Teaching in one section of the UNCC English Department under supervision of English staff. Students will be accepted for internship only near the end of the degree program and upon approval of the Department. Students will be assigned to teach selected basic courses, and also will participate in periodic conferences and seminars. *(Fall, Spring)*

(680) **ENGL 6680. Seminar in British Literature. (3G)** *(Yearly) (Evenings)*

(685) **ENGL 6685. Seminar in American Literature. (3G)** *(Yearly) (Evenings)*

(690) **ENGL 6890. Directed Reading. (1-3G)** *(Fall, Spring, Summer)*

(696) **ENGL 6996. Thesis. (6G)** Appropriate research and written exposition of that research, which may or may not be outgrowth of work done in previous courses. If the thesis is the outgrowth of previous course work, considerable additional research and exposition must be done beyond that previously undertaken. The proposed thesis work, as well as the final product, will be approved by a committee of three faculty appropriate to the topic, appointed by the Chair of the Department after consultation with the student, on the basis of a written proposal from the student. It is recommended that thesis work not be undertaken until near the end of progress toward the degree. The thesis title is to be shown on the student's final transcript. (A statement of recommendations and requirements for form and procedure is available in the English Department office.) *(Fall, Spring, Summer)*

# Geography and Earth Sciences

*Degree:* M.A. *Coordinator:* Gerald F. Pyle

## MASTER OF ARTS DEGREE IN GEOGRAPHY

The Master of Arts program in geography offers concentration in three areas of study: (1) Location Analysis; (2) Urban-Regional Analysis and Planning; and (3) Environmental Analysis. The Location Analysis concentration focuses primarily upon a study of the location of commercial and public facilities. Students interested in retail location, industrial development, market area analysis and transportation should pursue course work in this concentration. Those students interested in planning or a broader perspective of the urban and regional environment should take course work in the Urban-Regional Analysis and Planning concentration. The Environmental Analysis concentration is aimed toward the training of the student in the identification and solution of problems of the physical environment which have important consequences for our society.

**Degree Requirements.** The M.A. program in geography requires a minimum of 36 semester hours of graduate credit. GEOG 6100, 6200, 6201, 7900 and 7901 will be required of all students. Up to 12 hours may be taken in related work. In addition, a minimum of nine semester hours in other 6000-level courses in geography and earth sciences is required.

Six semester hours of course work may be accepted for transfer from other accredited institutions. Course credit may be earned by examination as well. Transfer credits will not be accepted automatically. In any case, transfer credits, related work or credits earned through examination may not together exceed a total of 12 of the minimum 36 hours required.

**Continued Enrollment.** The progress of each student will be reviewed every semester by the departmental Graduate Advisory Committee and by the student's adviser. Continued enrollment will require a favorable recommendation by the Committee and the adviser. Prompt removal of any entrance deficiencies will be a major criterion for continued enrollment.

**Internships.** Most students will work as interns in a public or private agency. This work will take place toward the end of a student's program. The departmental internship director will assist students and faculty advisers in placing the student in an internship position that best relates to the interests of the student. The purpose of the internship is to expose the student to the problems and activities of the community and for the student to have the opportunity to apply geographic theory, technique and knowledge to real life practices. The student intern will work on a specific project under the supervision of both the sponsor and a faculty adviser. The results of the internship project will form the basis for the Individual Research Project report. The internship is not required and will be arranged only when it is possible to find a sponsoring company or agency that is willing to support research in the area of the student's interest. If a suitable internship cannot be arranged, the student will be expected to execute an independent research project at the level of a thesis in order to satisfy the 7900-7901 course requirement.

**Final Examination.** Each student must pass a comprehensive examination over both the discipline generally and in defense of the individual research report, as appropriate. The examination may be both written and oral.

## COURSE DESCRIPTIONS

### GEOGRAPHY (GEOG)

FOLLOWING ARE COURSES DESIGNED PRIMARILY FOR ADVANCED UNDERGRADUATES WHICH ARE AVAILABLE FOR GRADUATE CREDIT. SEE PAGES 138-139 FOR COMPLETE COURSE DESCRIPTIONS.

(402) **GEOG 4000. Selected Topics in Geography. (3) (3G)**

(332) **GEOG 4100. Cartographic Techniques. (3) (3G)**

(333) **GEOG 4105. Cartographic Design and Map Construction. (3) (3G)**

(334) **GEOG 4110. Computer Mapping. (3) (3G)**

(335) **GEOG 4115. Geographic Information Systems. (3) (3G)**

(480) **GEOG 4400. Internship in Geography. (3-6) (3-6G)**

(450) **GEOG 4800. Individual Study in Geography. (1-4) (1-4G)**

**Courses for Graduate Students Only**

(601) **GEOG 6000. Topics in Economic Geography. (3G)** Major topics in the location of economic activity. May be repeated for credit as topics vary. *(Yearly) (Evenings)*

(602) **GEOG 6005. Topics in Urban Geography. (3G)** Major topics in the form and structure of urban areas examined generally and in a specific local occurrence. May be repeated for credit as topics vary. *(Yearly) (Evenings)*

(603) **GEOG 6010. Topics in Political Geography. (3G)** Major topics in the spatial aspects of political systems with special emphasis on urban and regional spatial patterns examined generally and in a specific local occurrence. May be repeated for credit as topics vary. *(On demand)*

(604) **GEOG 6015. Topics in Regional Geography. (3G)** Intensive examination of major spatial questions in a given region. May be repeated for credit as topics vary. *(On demand)*

(605) **GEOG 6020. Topics in Environmental Studies. (3G)** Major topics concerning the physical environment with emphasis on pollution problems in urban areas examined generally and in a specific local occurrence. May be repeated for credit as topics vary. *(Yearly) (Evenings)*

(606) **GEOG 6025. Topics in Physical Geography. (3G)** Major topics in physical geography examined generally and in a specific local occurrence. May be repeated for credit as topics vary. *(Yearly) (Evenings)*

(651) **GEOG 6030. Topics in Geographic Techniques. (3G)** Cartographic, remote sensing, quantitative techniques or field techniques. May be repeated for credit as topics vary. *(On demand)*

(615) **GEOG 6100. Quantitative Analysis in Geography. (3G)** Multiple regression, trend surface, factorial analysis, cluster analysis, discriminant analysis. *(Fall) (Evenings)*

(616) **GEOG 6110. Cartographic Preparation and Analysis. (3G)** Cartographic design and analysis of qualitative and quantitative data. Emphasis on preparation of maps, figures and charts. Techniques include scribing and various photographic processes. Two three-hour labs each week. *(On demand)*

(617) **GEOG 6200. Research Design Fundamentals. (3G)** Scientific research and problem solving. Problem identification, bibliographic search, data sources and collection, techniques selection and preparation of reports and proposals. *(Spring) (Evenings)*

(318) **GEOG 6201. Analysis and Presentation of Research Data. (3G)** The student is required to complete a research project. Topics such as research critiques, preparation and presentation of research reports, and the development of geographic thought are considered. *(Fall) (Evenings)*

(650) **GEOG 6600. Seminar in Geography. (3G)** Study of the current trends in geographic thought and research methods. *Pass/No Credit* grading. *(On demand)*

(480) **GEOG 6800. Directed Problems in Geography. (3G)** Individual research into geographic topics. May be repeated one time. *(On demand)*

(690-691) **GEOG 7900-7901. Individual Research Project. (3G, 3G)** Individual research report based on directed study of a topic of geographic significance. *Pass/No Credit* grading. *(Fall, Spring)*

## COURSE DESCRIPTIONS

### EARTH SCIENCES (ESCI)

FOLLOWING ARE COURSES DESIGNED PRIMARILY FOR ADVANCED UNDERGRADUATES WHICH ARE AVAILABLE FOR GRADUATE CREDIT. SEE PAGE 141 FOR COMPLETE COURSE DESCRIPTIONS.

(352) **ESCI 4100. Petrology. (4) (4G)**

(353) **ESCI 4105. Sedimentary Petrology. (4) (4G)**

(410) **ESCI 4115. Applied Geophysics. (4) (4G)**

(355) **ESCI 4120. Geologic Mapping and Interpretation. (4) (4G)**

(470) **ESCI 4125. Geologic Summer Field Camp. (6) (6G)**

(375) **ESCI 4130. Optical Mineralogy. (4) (4G)**

(425) **ESCI 4135. Tectonics. (4) (4G)**

(348) **ESCI 4150. Applied Climatology. (3) (3G)**

(362) **ESCI 4155. Fluvial Processes. (4) (4G)**

(480) **ESCI 4400. Internship in Earth Sciences. (3-6) (3-6G)**

(460) **ESCI 4800. Individual Study in Earth Sciences. (1-4) (1-4G)**

**Courses for Graduate Students Only**

(660) **ESCI 6060. Earth Sciences Field Investigations. (1-6G)** Prerequisite: consent of instructor. A concentrated field investigation of selected earth sciences topics. Course subject matter, credit hours, location and duration will be specified each time course is offered. May be repeated for credit. *Pass/No Credit* grading. *(On demand)*

(650) **ESCI 6650. Workshop in Geography. (4G)** Earth Science I. A series of lectures on the subject matter of the atmosphere and hydrosphere with accompanying laboratory sessions. *(On demand)*

(651) **ESCI 6651. Workshops in Geology. (4G)** Earth Science II. A series of lectures on subject matter of the lithosphere and space science with accompanying laboratory sessions. *(On demand)*

# History

*Degrees:* M.A. *Coordinator:* Julia Blackwelder

**MASTER OF ARTS DEGREE IN HISTORY**

The program for the Master of Arts degree in history is designed to assist individuals to develop the methodological, literary and conceptual skills of the professional historian. Graduates of the program will be able to employ this expertise in a variety of ways, as students in a doctoral program, as professionally oriented history teachers in the secondary schools or as citizens more acutely aware of the historical development of their society.

The Department offers courses in African, American, Asian, European and Latin American history. Information on specific courses and areas of concentration is available from the Graduate Coordinator.

**Degree Requirements.** The Master of Arts in history requires the completion of a minimum of 30 hours of graduate work with a 3.0 grade point average in all courses taken for graduate credit and with a maximum of two *C's* permitted for continuation in the program.

Candidates must complete:

a) A minimum of 30 hours of approved graduate credit.
b) A minimum of 24 hours of work in history courses approved for graduate work.
c) Of the 24 hours, no more than six may be taken in individually designed reading or research courses.
d) At least 15 of the 24 hours must be taken in seminars, or colloquia, open only to graduate students.
e) All students must complete HIST 6693 Historiography and Methodology with a grade of *B* or better.

Students may elect six hours of graduate work in another field. Candidates seeking Graduate Education Certification may exercise their elective option by undertaking graduate course work in the College of Education and Allied Professions. Students seeking Graduate Education Certification should solicit the advice of the College of Education and Allied Professions as to appropriate professional education courses. Should the College of Education and Allied Professions require more than six hours for Graduate Education Certification, the additional hours will be added to the total ordinarily completed for the Master of Arts in History.

At least 24 hours of graduate work must be taken in residence. A maximum of six hours may be accepted from other accredited universities.

Candidates must successfully complete a comprehensive written examination in their area of concentration. This examination will be given at or near the completion of course work. A thesis may be substituted for the written examination.

Candidates must successfully complete a final oral examination, which will include a defense of a formal thesis or a seminar paper selected by the student as illustrative of the student's historical research and writing. All requirements must be completed within six calendar years of the date of original enrollment in the program.

Students are not required to demonstrate through examination knowledge of a foreign language; however, the Department of History assumes that a candidate will be able to use whatever languages are required by the candidate's research interests.

All students in the program are expected to maintain a *B* average in all courses taken. Students whose averages fall below that level will be subject to suspension on recommendation of the Graduate Committee of the Department of History.

**Administration.** The admission of students and approval of each student's program shall be the responsibility of the Graduate Committee of the Department of History.

The planning and monitoring of each student's program shall be the function of the Graduate Coordinator. The Graduate Coordinator shall advise and assist the student in selecting an Examining Committee.

The Examining Committee shall conduct the student's comprehensive written and final oral examinations. The Examining Committee shall consist of two faculty members from the Department of History, and a third member selected from History or another department.

## COURSE DESCRIPTIONS

### HISTORY (HIST)

**Courses for Advanced Undergraduates and Graduate Students**

See page 149 for complete course descriptions.

(411) **HIST 4000. Problems in History. (3) (3G)**

(491) **HIST 4001. Problems in European History. (3) (3G)**

**HIST 4002. Problems in Non-Western History. (3) (3G)**

**HIST 4100. The Nature of Historical Study. (3) (3G)**

**Courses for Graduate Students Only**

(650) **HIST 6000. Topics in History. (3G)** Intensive treatment of a period or broader survey of a topics, depending on student needs and staff resources. May be repeated for credit as topics vary. *(Fall, Spring) (Evenings)*

**HIST 6196. Urban Systems for School Administrators. (3G)** Corequisite: POLS 6196. An interdepartmental, team-taught course which consists of a survey of the causes and consequences of urbanization in the United States with particular attention to the urban South. Urbanization is treated as a system linking historic, political, economic, and social factors, particularly since 1945. *(Summer)*

**HIST 6200. History Teaching Alliance Institute. (3)** Open under special arrangement. *Pass/No Credit* grading only. *(On demand)*

(696) **HIST 6601. Graduate Colloquium. (3G)** A colloquium focused on a theme or period. Assigned readings, short papers and reports directed toward developing research and writing skills. May be repeated for credit. *(Fall, Spring) (Evenings)*

(693) **HIST 6693. Historiography and Methodology. (3G)** A study of historians and their philosophical and methodological approaches. Required of all M.A. candidates. *(Alternate years) (Evenings)*

(694) **HIST 6894. Readings in History. (3G)** Prerequisite: prior written consent of instructor. Coverage of historical periods or topics through individually designed reading programs; scheduled conference with a staff member. May be repeated for credit. *(Fall, Spring) (Evenings)*

(701) **HIST 6901. Directed Readings/Research. (3G)** Prerequisite: prior written consent of instructor and graduate coordinator. Graduate students will meet individually or in small groups with the instructor and will be assigned readings and/or research on a theme which relates to the lectures of an undergraduate class. Attendance at the lectures is a course requirement. May be repeated for credit. *(Fall, Spring, Summer)*

(697) **HIST 6997. Directed Research. (3G)** Prerequisite: prior written consent of instructor. Investigation of a historical problem culminating in a research paper. May be repeated for credit. *(On demand)*

(699) **HIS 6999. Thesis. (3G or 6G)** May be repeated by permission, if taken for three hours credit. Six hours of Thesis may be taken during a single semester. Appropriate research and written exposition of that research is required. *(On demand)*

# Mathematics
# Mathematics Education

*Degree:* M.A.

*Mathematics Coordinator:* Charles Burnap
*Mathematics Education Coordinator:* Phillip E. Johnson

## MASTER OF ARTS DEGREE IN MATHEMATICS

The Master of Arts degree in Mathematics is designed both to provide advanced skills and knowledge for those seeking either positions in industry or in government, or teaching positions at the junior college or community college level, and to provide professional development to those currently in such positions. Graduates of the program will also be well prepared to enter directly into at least the second year of a Ph.D. program in mathematics, applied mathematics or statistics at other institutions, depending on the particular courses selected.

**Degree Requirements.** The Master of Arts degree in Mathematics requires successful completion of a minimum of 30 semester hours of graduate work approved by the Department Graduate Committee.

The Department groups the courses which may be applied toward the M.A. in Mathematics into five broad areas: Applied Mathematics, Probability-Statistics, Algebra-Topology, Analysis, and Computer Science. Each candidate must demonstrate, to the satisfaction of the Graduate Committee, competence on general knowledge in at least three of these areas. This may be accomplished by means of either (a) successful performance on a written comprehensive examination or (b) successful completion of courses in these areas.

Regularly offered courses which are available for graduate credit in the M.A. program are as follows:

Group I—Applied Mathematics: MATH 4111, 4112, 4113, 4114, 4165, 4176, 5172, 7147, 7171, 7172, 7176.

Group II—Probability-Statistics: MATH 4123, 4124, 5125, 7120, 7121, 7123, 7125, 7127.

Group III—Algebra-Topology: MATH 4163, 4164, 4181, 7163.

Group IV—Analysis: MATH 5143, 5144, 7141, 7143.

Group V—Computer Science: All 5000- and 6000-level Computer Science courses.

Each candidate must complete:

(a) MATH 5143 and MATH 5144 or their equivalents.

(b) At least 15 hours in courses numbered above 7000. (With the approval of the Department Graduate Committee, at most one three-hour 6000-level Group V course of sufficient theoretical nature may be applied toward the 15 hours.)

(c) At least one course from two of the groups I, II, III, V.

Each candidate must perform satisfactorily on an oral comprehensive examination over the candidate's program of study.

**Thesis.** Completion of a satisfactory thesis is optional. With the approval of the Department Graduate Committee, a candidate may receive at most six of the 15 hours required at the 7000 level for the writing of a master's thesis. Subject to the approval by the Department Graduate Committee, this thesis may be either original work, work of an expository nature, or the mathematical formulation and solution of a particular industrial or business problem suggested by the career interests of the student. A candidate may not receive more than a total of six of the hours required at the 7000 level for course and thesis work in computer science. If the thesis option is elected, the candidate will be required to defend his/her thesis in an oral examination.

## MASTER OF ARTS DEGREE IN MATHEMATICS EDUCATION

The Master of Arts degree in Mathematics Education is designed primarily for secondary school teachers interested in professional growth and graduate certification in mathematics. Emphasis in this program is given to developing depth and breadth in mathematics appropriate to the role of the teacher.

Each candidate must complete:

(a) 18 hours of mathematics courses approved for graduate credit. At least nine of these hours must be in courses numbered 6000 or above.

(b) Six hours of graduate courses approved for this program by the College of Education and Allied Professions. (EDUC 6100 and EDUC 6120 are recommended.)

(c) At least six additional hours of courses approved for graduate credit. These may be in mathematics, professional education or in a related area approved by the student's adviser.

Thirty semester hours of graduate credit or the equivalent are the minimum required for the degree and for graduate certification in mathematics. Of these, 15 hours must be in courses numbered 6000 or above. Programs of study beyond these 30 hours may be required to remove deficiencies in undergraduate programs or to develop areas of need, interest, or desired experience.

Approval of the program of each student and provision of advice regarding progress toward the degree are the responsibility of an adviser appointed at the time of admission by the Department of Mathematics.

Each student must pass a comprehensive examination, including an oral examination, on the overall work presented for the degree.

## MATHEMATICS (MATH)

FOLLOWING ARE COURSES PRIMARILY FOR ADVANCED UNDERGRADUATES WHICH CARRY GRADUATE CREDIT. FOR COMPLETE COURSE DESCRIPTIONS, SEE PAGES 158-159.

(300) **MATH 4000. Topics in Foundations or History of Mathematics. (2-3) (2-3G)**

(310) **MATH 4010. Topics in Decision Mathematics. (2-3) (2-3G)**

(320) **MATH 4020. Topics in Probability and Statistics. (2-3) (2-3G)**

(340) **MATH 4040. Topics in Analysis. (2-3) (2-3G)**

(360) **MATH 4060. Topics in Algebra. (2-3) (2-3G)**

(370) **MATH 4070. Topics in Applied Mathematics. (2-3) (2-3G)**

(380) **MATH 4080. Topics in Geometry and Topology. (3) (3G)**

(409) **MATH 4109. History of Mathematical Thought. (3) (3G)**

(411) **MATH 4111. Linear Programming. (3) (3G)**

(412) **MATH 4112. Non-linear Programming. (3) (3G)**

(413) **MATH 4113. Game Theory. (3) (3G)**

(414) **MATH 4114. Dynamic Programming. (3) (3G)**

(423) **MATH 4123. Applied Statistics I. (3) (3G)**

)424) **MATH 4124. Applied Statistics II. (3) (3G)**

(522) **MATH 4161. Number Theory. (3) (3G)**

(463) **MATH 4163. Modern Algebra I. (3) (3G)**

(464) **MATH 4164. Modern Algebra II. (3) (3G)**

(465) **MATH 4165. Numerical Linear Algebra. (3) (3G)**

(476) **MATH 4176. Numerical Methods in Partial Differential Equations. (3) (3G)**

(481) **MATH 4181. Introduction to Topology. (3) (3G)**

(491) **MATH 4691. Seminar. (1-6) (1-6G)**

(492) **MATH 4692. Seminar. (1-6) (1-6G)**

**Courses for Graduate Students and Advanced Undergraduates**

(522) **MATH 5122. Statistical Techniques. (3) (3G)** Prerequisite: consent of the Department. Probability models, random variables, large sample statistics, inferential statistics. (Credit toward mathematics major given only for students seeking secondary certification. Credit for mathematics major not given for both MATH 5122 and 3122. Not approved for the M.A. degree in mathematics.) *(Spring) (Evenings)*

(525) **MATH 5125. Nonparametric Statistical Methods. (3) (3G)** Prerequisite: MATH 2121 or 3122 or 4123. An introduction to nonparametric statistical techniques for analysis of real life data, including the Wilcoxon signed rank test, the Mann-Whitney U statistic, the Druskal-Wallis one way ANOVA test. *(Fall) (Alternate years)*

(543) **MATH 5143. Analysis I. (3) (3G)** Prerequisite: MATH 3141 with a grade of *B* or better, or consent of the Department. First course of two-semester sequence providing rigorous treatment of continuity, differentiability and integration of functions of one and several real variables. *(Fall)*

(544) **MATH 5144. Analysis II. (3) (3G)** Prerequisite: MATH 5143 with a grade of *B* or better or consent of the Department. Continuation of MATH 5143. *(Spring)*

(572) **MATH 5172. The Finite Element Method. (3) (3G)** Prerequisites: CSCI 1100, MATH 2141, 2164, and 2171—all with a grade of *C* or better, or consent of the Department. Boundary value problems and their variational form. Finite element basis functions, computational techniques, isoparametric elements and curved boundaries, alternate methods, singular problems, eigenvalue problems. Some practical experience with an F.E.M. program and graphical output. *(Fall) (Alternate years)*

**Courses for Graduate Students Only**

(604) **MATH 6004. Topics in Analysis. (3G)** Prerequisite: MATH 6101 or consent of the Department. Topics in analysis selected so as to complement regular course offerings in this area of mathematics. May be repeated for credit with the consent of the Department. *(On demand)*

(608) **MATH 6008. Topics in Geometry and Topology. (3G)** Prerequisite: consent of the Department. Topics selected from Euclidean geometry, non-Euclidean geometry, projective geometry, differential geometry, point-set topology, algebraic topology. May be repeated for credit with approval of the Department. *(On demand)*

(600) **MATH 6100. Foundations of Mathematics. (3G)** Prerequisite: consent of the Department. Logic, sets and axiomatic systems. *(Summer)*

(601) **MATH 6101. Foundations of Real Analysis. (3G)** Prerequisite: MATH 6100 or consent of the Department. Axiomatic and historical development of the real and complex numbers; rigorous development of limits and continuity of functions, intermediate and extreme value theorems. *(Fall) (Alternate years)*

(602) **MATH 6102. Calculus from an Advanced Viewpoint. (3G)** Prerequisite: MATH 6101 or its equivalent. A continuation of MATH 6101. A rigorous approach to differentiation and integration of functions of one real variable. *(Spring) (Alternate years)*

(603) **MATH 6103. Computer Techniques and Numerical Methods. (3G)** Prerequisite: MATH 6101 or consent of the Department. Computer systems, programming, and the computer solution of numerical problems. *(Summer) (Alternate years)*

(606) **MATH 6106. Modern Algebra. (3G)** Prerequisite: MATH 2163 or its equivalent or consent of the Department. Topics chosen from group theory, rings and ideals, integral domains, fields and elementary Galois theory. *(Summer) (Alternate years)*

(607) **MATH 6107. Linear Algebra. (3)** Prerequisite: MATH 2164 or its equivalent or consent of the Department. Systems of linear equations, matrices, vector spaces, linear transformations, determinants, canonical forms of matrices, inner products. *(Summer) (Alternate years)*

(618) **MATH 6118. Non-Euclidean Geometry. (3)** Prerequisite: consent of the Department. History of Euclid's Fifth Postulate and attempts to prove it; work of Gauss, Bolyai, Lobachevsky and others; systematic development of hyperbolic geometry; relative consistency of hyperbolic geometry; relative consistency of hyperbolic and Euclidean geometries. *(Alternate years)*

**MATH 6171. Advanced Applied Mathematics I. (3G)** Prerequisites: MATH 2141 and 2171 with grades of *C* or better or consent of the Department. Power series solutions of ordinary differential equations, vector calculus, line and surface integrals, partial differential equations and Fourier integrals. *(Fall) (Evenings)*

**MATH 6172. Advanced Applied Mathematics II. (3G)** Prerequisites: MATH 2141 and 2171 with grades of *C* or better or consent of the Department. Complex analysis; probability and statistics. *(Spring) (Evenings)*

(609) **MATH 6609. Seminar. (1-2-3G)** Prerequisite: consent of the Department. A series of regularly scheduled meetings in which each student will present one or more topics selected by the instructor. May be repeated for credit with approval of the Department. *(On demand)*

(750) **MATH 7050. Topics in Mathematics. (2-3G)** Prerequisite: consent of the Department. Topics chosen from such fields as algebra, topology, analysis, applied mathematics, differential geometry, mathematical physics, graph theory, probability, statistics. May be repeated for credit as topics vary and with the approval of the Department. *(On demand)*

(720) **MATH 7120. Probability Theory. (3G)** Prerequisites: MATH 5143 and 3122 or consent of the Department. Topics include probability spaces, probability measures, sigma-algebras, characteristic functions, sequences of random variables, law of large numbers, general forms of the Central Limit Theorem. *(Fall) (Alternate years)*

(721) **MATH 7121. Statistics. (3G)** Prerequisite: MATH 7120 or consent of the Department. A survey of frequently used statistical techniques selected from: estimation theory and hypothesis testing; parametric and nonparametric techniques in the one and two sample location and dispersion problems; goodness of fit criterion and tests for independence; measures of association, regression techniques, multi-sample inferential techniques. *(Spring) (Alternate years)*

**MATH 7123. Time Series Analysis. (3G)** Prerequisites: MATH 2164 and 3123 or consent of the Department. A selection of topics from the following list: stationary and non-stationary stochastic processes, classification of time series occurring in practice, general autoregressive-moving average processes, estimation of the parameter, the spectrum, cross correlation function and cross spectrum, estimation of cross spectra, estimation of frequency response functions, multivariate spectral analysis. *(Fall) (Alternate years)*

(725) **MATH 7125. Stochastic Processes. (3G)** Prerequisites: MATH 3122 and 5143 or consent of the Department. Basic ideas in the study of stochastic processes. Topics will be selected from: discrete and continuous time Markov processes, stationary and renewal processes, applications to queuing theory, reliability theory, stochastic differential equations, time-series analysis, filtering and stochastic control theory. *(Spring) (Alternate years)*

**MATH 7127. Linear Statistical Models. (3G)** Prerequisites: MATH 2164 and 3123 or consent of the Department. A selection of topics from the following list: distribution and quadratic forms, regression, dummy variables, models not of full rank, the two-way crossed classification, time series. *(Fall) (Alternate years)*

(741) **MATH 7141. Complex Analysis I. (3G)** Prerequisite: MATH 5143 or consent of the Department. Holomorphic functions, complex integration, residues, entire and meromorphic functions, conformal mapping, harmonic functions. *(Spring) (Alternate years)*

(742) **MATH 7142. Complex Analysis II. (3G)** Prerequisite: MATH 7141. A continuation of MATH 7141. *(On demand)*

(743) **MATH 7143. Real Analysis I. (3G)** Prerequisite: MATH 5144 or consent of the Department. Lebesgue integration on the real line, $L^p$ spaces, introduction to general measure and integration theory. *(Summer) (Alternate years)*

(744) **MATH 7144. Real Analysis II. (3G)** Prerequisite: MATH 7143. A continuation of MATH 7143. *(On demand)*

(747) **MATH 7147. Applied Functional Analysis. (3G)** Prerequisite: MATH 5144. Introduction to functional analysis and its applications to such areas as linear and non-linear differential equations, integral equations, and control theory. Topics chosen from Banach spaces, operators, the Hahn-Banach, open mapping and closed graph theorems, Sobolev spaces, spectral theory, operators in Hilbert space. *(Summer) (Alternate years)*

(736) **MATH 7163. Modern Algebra I. (3G)** Prerequisite: MATH 4164 or consent of the Department. Topics will be selected from Galois theory, commutative algebra, modules, ring theory, homological algebra. *(Fall) (Alternate years)*

(764) **MATH 7164. Modern Algebra II. (3G)** Prerequisite: MATH 7163. A continuation of MATH 7163. *(On demand)*

(771) **MATH 7171. Methods of Applied Mathematics. (3G)** Prerequisite: MATH 2171 and 3171 or consent of the Department. Selected topics involving applications of analysis such as variational methods in optimization, linear integral equations, vibration and eigenvalue problems, and asymptotic expansions. *(Fall) (Alternate years)*

**MATH 7172. Partial Differential Equations. (3G)** Prerequisite: MATH 5144. Harmonic functions, mean-value theorem, maximum principle, Green's representation for the solution of the Dirichlet problem for Laplace's equation; Poisson's equations and the Poisson formula; statement and proof of the existence theorem for general second-order elliptic operators, generalized maximum principles; Sobolev spaces. Evolution equations involving elliptic operators, such as the heat or wave equations, may also be introduced. *(Fall) (Alternate years)*

(776) **MATH 7176. Advanced Numerical Analysis. (3G)** Prerequisites: MATH 2164, 2171 and 5172. A selection of topics from such areas as iterative methods of solving linear and nonlinear systems of equations, approximation theory, splines, and finite element methods of partial differential equations. *(Spring) (Alternate years)*

(781) **MATH 7181. Topology I. (3G)** Prerequisite: consent of the Department. Topological spaces, continuous functions, connectedness, compactness, and metrizability, and further topics from point-set, geometric or algebraic topology. *(On demand)*

(782) **MATH 7182. Topology II. (3G)** Prerequisite: MATH 7181. A continuation of MATH 7181. *(On demand)*

(791) **MATH 7691. Research Seminar. (3G)** Prerequisite: consent of the Department. A seminar in which independent study may be pursued by the student or group of students under the direction of a professor. *(On demand)*

(792) **MATH 7692. Research Seminar. (3G)** Prerequisite: consent of the Department. A continuation of MATH 7692. *(On demand)*

(793) **MATH 7893. Thesis. (3G)** Prerequisite: Consent of the Department. Subject to the approval of the Department Graduate Committee, the thesis may be original work, work of an expository nature, or the mathematical formulation and solution of a particular industrial or business problem suggested by the career interest of the student. The thesis must be defended in an oral presentation. May be repeated for credit with the consent of the Department.

## MATHEMATICS EDUCATION (MAED)

**Courses for Graduate Students and Advanced Undergraduates**

(500) **MAED 5000. Topics in Mathematics Education, Early Childhood. (1-6) (1-6G)** Prerequisite: consent of the Department. *(On demand)*

(540) **MAED 5040. Topics in Mathematics Education, Intermediate. (1-6) (1-6G)** Prerequisite: consent of the Department. *(On demand)*

(570) **MAED 5070. Topics in Mathematics Education, Secondary. (1-6) (1-6G)** Prerequisite: consent of the Department. *(On demand)*

(501) **MAED 5101. Arithmetic in the School. (3) (3G)** Prerequisite: MATH 1101 or equivalent. A study of the number systems with emphasis placed upon the basic concepts and meanings, properties of addition, multiplication, inverses, systems of numeration and number line appropriate for each grade.(Does not count toward a major in mathematics. Open only to transfer students who have completed six semester hours of mathematics at another university.) *(On demand)*

(504) **MAED 5104. Microcomputing for Teachers. (3) (3G)** Prerequisites: working knowledge of college algebra and trigonometry, and consent of the Department. Introduction to basic computer concepts, to microcomputer systems, to the design and development of programs to assist instruction in mathematics and computer sciences. A programming language such as BASIC or PASCAL will be used. Each student will integrate skills learned by selecting, designing and developing a specific project. (No prior experience with computer or programming required.) *(Spring) (Alternate years) (Evenings)*

(505) **MAED 5105. Geometry for Teachers. (3) (3G)** Prerequisite: MAED 2102 or 5101 or consent of the Department. A study of the foundations of Euclidean geometry and a brief treatment of non-Euclidean geometry. Emphasis on learning activities and teaching techniques for teachers of mathematics K-12. *(Fall) (Evenings)*

(541) **MAED 5141. Mathematics for the Intermediate School Teacher. (3) (3G)** Prerequisite: MAED 2102 or consent of the Department. A study of the algebraic properties of the real numbers; functions, equations, inequalities and their graphs, activities and applications related to upper elementary and intermediate grades. *(Fall) (Alternate years) (Evenings)*

(571) **MAED 5171. Mathematics for the Secondary School Teacher. (3) (3G)** Prerequisite: MAED 2102 or mathematics major with declared option for Secondary School Teacher Certification or consent of the Department. A study of secondary school mathematics and its relation to the curriculum K-12. Strategies, techniques and activities in teaching mathematics. *(Fall) (Evenings)*

# Nursing

*Degree:* M.S.N. *Coordinator:* Pauline Mayo

**MASTER OF SCIENCE IN NURSING**

The Master of Science in Nursing degree is designed to prepare the nurse for advanced practice in a specialized area of nursing through assumption of a primary role of teacher, clinical specialist or administrator. The student selects one of the following areas of specialization: Adult Health Nursing, Parent-Child Health Nursing, Mental Health Nursing or Nursing Administration.

Master's level study includes the following:

1. Examination and testing of theories from nursing and other disciplines relevant to a specialized area of nursing.
2. Application of systematic methodologies to the identification and investigation of phenomena of concern to nursing.
3. Evaluation of the efficiency and effectiveness of programs, processes and procedures utilized in nursing.
4. Integration of clinical and role competencies into nursing practice and leadership.

**Degree Requirements.** The Master of Science in Nursing degree program requires completion of 45 semester hours of graduate credit. Requirements for the program may be completed in four semesters and one summer session of full-time study or spread over a longer period of part-time study.

In addition to course work, each student must prepare and present a thesis or a special project acceptable to the student's advisory committee. A comprehensive examination in the form of an oral defense is required for completion of the program.

Up to six semester hours of graduate transfer credit may be accepted from another accredited institution upon approval of the student's adviser, the graduate program Coordinator and the Dean of the Graduate School. Other course work should be taken in residency. All course work, including accepted transfer credits, must be completed within a six-year period.

**Program Components.** Following is a description of the components of the curriculum. Additional information may be obtained from the College of Nursing. The program emphasizes flexibility within a basic structure so that students may achieve varying professional goals.

The nursing component represents the major portion of requirements for the master's degree and includes five types of courses: core, research and thesis, area of specialization, functional area, and cognate support.

*I. Core Area of Study.* Students must complete eight credit hours of core courses, which provide an introduction to nursing theory, concept analysis, in-depth study of contemporary health issues and the analysis of societal forces and systems related to the practice of nursing. Required courses are: NURS 6101, 6110 and 6115.

*II. Research and Thesis Component.* The thesis or special project demonstrates the capacity for research, originality of thought and facility in organizing data. A total of 11 credit hours of course work is required, including: NURS 6160, 6661, 6962, and a graduate-level statistics course.

*III. Specialization Area of Study.* The specialization courses emphasize utilization of theoretical bases for nursing practice. Students select an area of specialization to prepare for activities in client care, consultation, community activities, and planning policies and change. Required courses by area of specialization are: **Adult Health Nursing**—NURS 6120 and 6125; **Mental Health Nursing**—NURS 6130 and 6135; **Parent-Child Health Nursing**—NURS 6140 and 6145; **Nursing Administration**—NURS 6170, 6171, 6172, 6488 and 6895. Total credit hours accrued by completing the above requirements are eight credits for each specialization area except for Nursing Administration, which requires 14 credit hours.

*IV. Functional Area of Study.* Students who select a specialization area in Adult Health Nursing, Mental Health Nursing, or Parent-Child Health Nursing must select a functional area of study

focusing on preparation for teaching, clinical specialist, or management roles. Nine credit hours of course work are required, including the following nursing courses by functional area: **Education**—NURS 6480; **Clinical Specialist**—NURS 6484; **Management**—NURS 6482. (Nursing Administration students have no required course work in this area.)

*V. Cognate Support Component.* Selected cognate courses from nursing, biological, behavioral, social and physical sciences are prerequisites for the specialization and functional nursing courses. Nine credit hours of cognate courses are required for all concentrations except Nursing Administration, which requires 12 credit hours. Courses are chosen by students and faculty advisers to support the program of study. A behavioral science elective is required.

## NURSING (NURS)

(490) **NURS 4090. Topics in Nursing. (3) (3G)** Prerequisite: permission of instructor. Topics to be chosen from the specialties of nursing, including both clinical and theoretical foci. *(On demand)*

**NURS 5090. Selected Topics in Nursing. (3) (3G)** Prerequisite: permission of instructor. Topics to be chosen from the specialties of nursing. May be repeated for credit as topics vary. No more than six hours of NURS 5090 and 6895 may be counted toward degree requirements. *(Fall, Spring)*

(601) **NURS 6101. Nursing Theory. (3G)** Analysis of various theories underlying nursing practice with emphasis on assisting the learner to utilize theory analysis as a basis for developing nursing practice, education or research. *(Fall)*

(610) **NURS 6110. Perspectives in Nursing. (2G)** Analysis of the societal forces, issues and trends having an impact on nursing and health care, including a critical examination of strategies which accelerate or impede the change process. *(Fall)*

(615) **NURS 6115. Health Planning in the Health Care System. (3G)** The process of health care planning, including analysis of the implications of federal, state and local legislation on health care and nursing. Consideration of roles and participation of nursing in political and organizational decisions involving health care. *(Spring)*

(620) **NURS 6120. Adult Health Nursing I. (4G)** Prerequisites: BIOL 4273 or equivalent; physical assessment course. Examination of scientific data relevant to adult health and illness with emphasis on the utilization of multidisciplinary theory in the assessment and implementation of nursing practice. Autonomous nurse behavior in response to health-illness events is stressed. *(Spring)*

(625) **NURS 6125. Adult Health Nursing II. (4G)** Prerequisite: NURS 6120. Continuation of NURS 6120. *(Fall)*

(630) **NURS 6130. Mental Health Nursing I. (4G)** Examination and application of the therapeutic process of mental health nursing with emphasis on application of theories from psychiatric, behavioral, cultural sciences and nursing to select clinical experiences. Theoretical seminar, clinical conference, clinical experience and supervision provide opportunities for development of the roles of the nurse as a group leader and therapist. *(Fall)*

(635) **NURS 6135. Mental Health Nursing II. (4G)** Prerequisite: NURS 6130. Continuation of NURS 6130 with focus on defining the role of nursing in community mental health settings. *(Spring)*

(640) **NURS 6140. Parent and Child Health Nursing I. (4G)** Prerequisites: BIOL 4273 or equivalent; physical assessment course. Assessment and management of clients of childbearing and childrearing families focusing on the theoretical concepts in parenting, family development, nurturing and human sexuality with emphasis on the development and behavior of children as biopsychosocial beings in the context of the illness-wellness continuum. *(Fall)*

(645) **NURS 6145. Parent and Child Health Nursing II. (4G)** Prerequisite: NURS 6140. Continuation of NURS 6140 with focus on acute, complex care problems of children or pregnant women and their families. *(Spring)*

(660) **NURS 6160. Research Process in Nursing. (3G)** Application of inquiry methods to nursing problems. Emphasis is on utilizing critical analysis of research methods applicable to nursing problems. *(Fall)*

**NURS 6170. Organization and Administration in Nursing Services. (3G)** Prerequisites: NURS 6101 and MBAD 6161 or permission of instructor. Provides a knowledge base from which to conceptualize, investigate and understand complex organizations and management processes with emphasis on nursing as a major component of the health care delivery system. *(Fall)*

**NURS 6171. Resource Management in Health Care Organizations. (3G)** Prerequisite: NURS 6101, 6170 or permission of instructor. This course is designed to examine critical nursing management issues associated with human, fiscal and material resources in a variety of health care settings. A systems approach with emphasis on hospital information management provides the central framework for the study of nurse staffing, utilization, patient acuity and quality assurance components conducive to the professional practice of nursing. *(Spring)*

**NURS 6172. Financial Management in Health Care Organizations. (3G)** Prerequisites: NURS 6101, 6170 and 6171, or permission of instructor. This course examines the theory and practice of financial management in health care organizations as context for the planning and control of the nursing budget. Strategies for successful budget presentation, defense and negotiation will be used. *(Fall)*

(680) **NURS 6480. Teaching Practicum. (3G)** Prerequisites: completion of two related courses and at least one advanced clinical course. Individualized teaching experience with a faculty preceptor in both clinical and classroom settings, emphasizing application of teaching strategies, theories of learning, and principles of evaluation. *(Fall, Spring)*

(682) **NURS 6482. Management Practicum. (3G)** Prerequisites: completion of NURS 6170, 6171 or 6172 and advanced clinical courses. Guided management practicum to participate with individuals and groups functioning in middle management roles in nursing services. Emphasis is placed on conceptual, human and technical skills in management. *(Fall)*

(684) **NURS 6484. Clinical Specialist Practicum. (3G)** Prerequisites: completion of two related courses and advanced clinical courses. Guided seminar and practicum focusing upon the role of the clinical specialist in the management of patient care. Emphasis is placed upon the use of theory, as well as political, organizational and professional processes in role development. *(Fall)*

(688) **NURS 6488. Advanced Administration Practicum. (4G)** Prerequisite: completion of all other required courses. The capstone course of the specialization area in Nursing Administration. Students demonstrate theory and practice in the field under the guidance of selected administrative preceptors. *(Fall, Spring)*

(661) **NURS 6661. Research Seminar. (3G)** Prerequisite: NURS 6160 and graduate statistics course. Application of inquiry methods to nursing problems including systematic observation and critical analysis of research methods. Submission of a written research or project proposal is required. *(Fall, Spring)*

(695) **NURS 6895. Independent Study. (1-2-3G)** Guided individual study in topics or issues related to nursing arranged with a faculty adviser. May be repeated for credit. No more than six hours in NURS 5090 and 6895 may be counted toward degree requirements. *(Fall, Spring)*

(662) **NURS 6962. Thesis. (1-2-3G)** Prerequisite: NURS 6661. Production of a piece of nursing research or investigation of a problem relevant to nursing which demonstrates contribution to professional knowledge through systematic investigation. *(Fall, Spring)*

# Psychology

*Degree:* M.A.

*Community/Clinical Track Coordinator:* James R. Cook
*Industrial/Organizational Track Coordinator:* William D. Siegfried, Jr.

## MASTER OF ARTS DEGREE IN PSYCHOLOGY

The objective of the M.A. degree program in psychology is to train psychologists in the knowledge and skills necessary to address problems encountered in industry and urban living. The program has an applied emphasis and is designed to serve both full-time students and part-time students who need to improve their on-the-job skills and enhance their career development. There is an extensive practicum component utilizing the local community as a setting for applied experience.

**Degree Requirements.** Students may choose from two areas of concentration—Community/Clinical or Industrial/Organizational. Both programs require a minimum of 40 semester hours of graduate course work, of which 28 must be at the 6000 level or above. Six hours may be transferred from another accredited institution, other UNCC disciplines or from the 5000-level psychology courses taught prior to the implementation of the graduate program (except PSYC 4140), subject to departmental approval.

A core of courses in basic knowledge and methods in psychology is required of students in both concentrations. This core includes ten semester hours of the following: PSYC 6102—Research Design and Quantitative Methods in Psychology (3), PSYC 6145—Program Evaluation (3), PSYC 7999—Thesis (3), and, PSYC 6107—Ethical and Professional Issues in Psychology (1).

In addition, all students are required to successfully complete comprehensive examinations in the general disciplines as well as the area of concentration.

### Community/Clinical

Students selecting this concentration will develop knowledge and skills in psychological assessment, various intervention strategies, research evaluation and consultation. The following course work is required:

PSYC 6151: Behavior Disorders (3G)
PSYC 6155: Community Psychology (3G)
PSYC 6141: Intellectual Assessment (3G)
PSYC 6150: Psychological Treatment (3G)
PSYC 6450: Practicum in Clinical Psychology (3G)
PSYC 6455: Practicum in Community Psychology (3G)
PSYC 6142: Personality Assessment (3G)

Additional courses may be required for an individual student's program of study, as determined by the academic adviser and the Community/Clinical Program Committee.

### Industrial/Organizational

Students selecting this concentration will develop knowledge and skills to deal with problems of people at work. Among the issues to be studied will be personnel selection, design and evaluation of various types of programs including those aimed at training employees, increasing performance, reducing conflict and enhancing job satisfaction. The following course work is required:

PSYC 6140: Psychological Measurements and Evaluation (3G)
PSYC 6171: Industrial/Organizational Psychology (3G)
PSYC 6477: Projects in Industrial/Organizational Psychology (3G)

Nine credit hours from the following:

PSYC 6172: Personnel (3G)
PSYC 6173: Individual Dynamics (3G)
PSYC 6174: Group Dynamics (3G)
PSYC 6175: Organizational Dynamics (3G)
PSYC 6176: Counseling in Organizations (3G)

Students in the Industrial/Organizational Psychology concentration are strongly encouraged to take six semester hours of projects (PSYC 6477). Additional courses may be required for an individual student's program of study as determined by the academic adviser and the Industrial/Organizational Program Committee.

## COURSE DESCRIPTIONS

### PSYCHOLOGY (PSYC)

**Courses for Advanced Undergraduates and Graduate Students**

(504) **PSYC 4140. Tests and Measurements. (3)(3G)** Prerequisites: PSYC 1101. Psychological and educational measurements in current use with emphasis on structure, administration and application of group tests. Individual tests such as Stanford-Binet, WISC and WAIS will be reviewed. *(Alternate years)*

(599) **PSYC 5006. Selected Topics in Psychology. (3)(3G)** Prerequisites: junior, senior or graduate standing. Examination of special psychological topics. *(On demand)*

(501) **PSYC 5152. Psychology of Exceptional Children. (3)(3G)** Assessing and treating the exceptional child. Emphasis on current research in several diagnostic categories, including the emotionally disturbed, learning disabled, mentally retarded, physically handicapped and gifted. *(Alternate years)*

(503) **PSYC 5153. Psychology of Mental Retardation. (3)(3G)** Psychological and sociological aspects of mental retardation in relation to adjustment and educational development. Emphasis on current research and diagnostic categories. *(Alternate years)*

**Courses for Graduate Students Only**

Permission of the Department required for enrollment in these courses:

(699) **PSYC 6099. Topics in Psychology. (3G)** A discussion of selected topics in psychology. *(On demand)*

(601) **PSYC 6102. Research Design and Quantitative Methods in Psychology. (3G)** Prerequisites: MATH 1222 and PSYC 2102 or equivalent. Experimental and correlational methods of psychological research, including single subject designs with emphasis on research design and the application of statistical methods to psychological research. *(Fall)*

(650) **PSYC 6107. Ethical and Professional Issues in Psychology. (1G)** Roles and responsibilities of psychologists, including ethical standards in professional practice, testing and research; expectations and problems confronting psychologists in industrial, clinical and professional organizations. *(Fall)*

(611) **PSYC 6111. Psychology of Learning and Memory. (3G)** Principles, theories and current research in learning with emphasis on human learning and memory. *(On demand)*

(613) **PSYC 6112. Applied Behavior Analysis. (3G)** Use of behavior principles in applied settings. Topics include: behavioral assessment, positive and negative reinforcement, punishment, extinction, stimulus control, maintenance and generalization of behavior change. Each student will design and carry out a behavior change project. *(On demand)*

(610) **PSYC 6113. Physiological Psychology. (3G)** The relationships between the nervous system and behavior. Topics include the structure of the nervous system and nerve conduction, the functional organization of the central nervous system, neuronal and hormonal control of behavior, biofeedback and other appropriate topics. *(On demand)*

(612) **PSYC 6115. Sensation and Perception. (3G)** Processes involved in receiving and interpreting sensory data including all the sensory systems with an emphasis on vision. *(On demand)*

(614) **PSYC 6120. Developmental Psychology. (3G)** Psychological development across the lifespan. *(On demand)*

(616) **PSYC 6124. Psychology of Aging. (3G)** Psychology of aging with particular emphasis on issues related to community/clinical psychology and industrial/organizational psychology. Topics include myths and stereotypes about aging, problems faced by older workers, retirement, mental health and normal aging, counseling the older adult, and psychological disorders in later life. *(On demand)*

(615) **PSYC 6130. Social Psychology. (3G)** Human social behavior; topics include affiliation, person perception, conformity and attitudes. *(On demand)*

**PSYC 6135. Psychology of Personality. (3G)** A critical evaluation of major personality theories including an extensive survey of current research. *(On demand)*

(602) **PSYC 6140. Psychological Measurement and Evaluation. (3G)** Prerequisite: PSYC 6102. Measurement of psychological characteristics; scaling, reliability, validity and norms; construction and use of the intelligence tests, personality inventories, interest tests, attitude scales, etc., interviewing, survey techniques and behavioral assessment. *(Spring)*

(631) **PSYC 6141. Intellectual Assessment. (3G)** Prerequisites: PSYC 6102 and permission of the Department. Theories of intelligence and methods of intellectual assessment, including practice in administering intelligence tests, interpreting results, and writing evaluation reports. *(Fall)*

(634) **PSYC 6142. Personality Assessment. (3G)** Prerequisite: PSYC 6151, 6141 or permission of the Department. Theories and methods used in the assessment of personality and psychopathology including practice in administering personality tests, interpreting results and writing psychological evaluations. *(Spring)*

(603) **PSYC 6145. Program Evaluation in Psychological Settings. (3G)** Prerequisite: PSYC 6102. Models of evaluative research; also techniques, designs and administration of program evaluation. Topics include role conflicts, entry issues, goal setting, research for program planning and implementation and examples of actual program design and evaluation. *(Spring)*

(632) **PSYC 6150. Introduction to Psychological Treatment. (3G)** Prerequisite: PSYC 6151. Major approaches to psychological intervention, including psychodynamic, behavioral, humanistic and cognitive-behavioral systems emphasizing practical therapy considerations, including crisis intervention, client behaviors at various stages of therapy, handling difficult clients and ethical and professional issues. *(Spring)*

(630) **PSYC 6151. Behavior Disorders. (3G)** Diagnostic systems in current use and the implications of these systems for psychologists; several perspectives on psychological processes, behavior disorders and diagnosis including psychodynamic, behavioral and social models. There will be extensive reading in the literature on theory and research. *(Fall)*

(633) **PSYC 6155. Community Psychology. (3G)** Research, intervention techniques and settings associated with major approaches in community psychology including the mental health, organizational, ecological and social action models. *(Fall)*

(660) **PSYC 6171. Industrial/Organizational Psychology. (3G)** Human behavior within organizations. Topics include personnel selection and placement, job analysis, motivation, satisfaction, consumer psychology and ergonomics. *(Fall)*

(661) **PSYC 6172. Personnel. (3G)** Theories of personnel selection and placement. Includes coverage of EEOC and other government guidelines. *(Spring)*

(662) **PSYC 6173. Individual Dynamics. (3G)** The individual within the organization. Special emphasis on theories of motivation and job satisfaction. *(Fall)*

(663) **PSYC 6174. Group Dynamics. (3G)** Group processes, including group formation, group decision-making, leadership and group structure. *(Yearly)*

(664) **PSYC 6175. Organizational Dynamics. (3G)** Organization theories and organizational change methods. *(Yearly)*

(665) **PSYC 6176. Counseling Psychology in Organizations. (3G)** Application of psychology to special problems within the organization, especially the counseling of employees experiencing life problems: for example, retirement, alcoholism, interpersonal conflict. *(Yearly)*

(640) **PSYC 6450. Practicum in Clinical Psychology. (1-3G)** Prerequisites: PSYC 6151 and permission of the Department. Experience in clinical assessment and/or psychotherapy with clients at local agencies under supervision from a faculty member on campus. May be repeated for credit with departmental approval. *(Fall, Spring)*

(641) **PSYC 6455. Practicum in Community Psychology. (1-3G)** Applications of the principles of community psychology to special problems within an organization or community setting. The project might include, but would not be limited to, consultation, program development, training, community education or program evaluation. May be repeated for credit with departmental approval. *(Fall, Spring)*

(670) **PSYC 6477. Projects in Industrial/Organizational Psychology. (1-3G)** Prerequisite: PSYC 6171. A structured practicum experience or research paper in industrial/organizational psychology. May be repeated for credit with departmental approval. *(Fall, Spring)*

(690) **PSYC 6899. Readings and Research in Psychology. (1-4G)** Prerequisite: permission of instructor and Department to be obtained in the semester preceding the semester in which the course is to be taken. Individual study in psychology which may take the form of conducting empirical research or formulating a critique and synthesis of existing research. May be repeated for credit. *(Fall, Spring, Summer)*

(770) **PSYC 7999. Thesis. (1-3G)** The thesis is coordinated with the student's interests and practical experience during the second year to allow the development of an area of specialization. Thesis projects can be of three types: (1) An original experiment that will contribute to the psychological literature; (2) a thorough case analysis including literature review and application; (3) the development of a community psychology program or intervention to accomplish an important, well-defined goal. A completed paper and oral presentation are required. May be repeated for credit with departmental approval. *(Fall, Spring, Summer)*

# Public Administration

*Degree:* M.P.A. *Coordinator:* Timothy D. Mead

## MASTER OF PUBLIC ADMINISTRATION

The primary objective of the Master of Public Administration (M.P.A.) degree program is to provide a curriculum which offers professional training in public administration with a special emphasis on the management of local government systems. The curriculum emphasizes the analysis of the political and administrative environment as well as the administrative decision-making approaches of public administration.

**Degree Requirements.** The Master of Public Administration program is structured into three distinct phases: I. Core; II. Advanced Work; and III. Directed Study. In all, the program requires 36 hours of graduate credit for completion of the degree.

*I. Core:* All students are required to complete: 18 hours in core areas as defined by the Department. The emphasis in the core area phase is twofold: achieving an overall perspective on the problems of public administration *and* comprehending the various managerial and analytical approaches salient to the environment of public administration.

After completion of the core requirements and before enrolling for an additional nine hours, each student must successfully complete a comprehensive examination before continuing work toward the degree.

*II. Advanced Courses:* The MPA program offers a number of advanced courses in areas of importance to public administrators including application of analytic tools and understanding of public administration processes. With the approval of an adviser, students may elect to take advanced work with other departments.

*III. Directed Study:* Each master's degree candidate is expected to complete a project on a topic of significance based on a field experience in public administration. This requirement can be satisfied by individual experience gained through professional involvement in public administration or experience obtained through an approved internship with a governmental unit.

**Program Instruction and Scheduling.** The methods of instruction employed in the program are designed to expose students to a variety of approaches to public management. These methods include simulations, role playing, problem analysis, lectures and case studies. The ability to analyze complex managerial problems can be developed only by combining theoretical principles and practical administrative experience. The instructional program is designed to expose the student to both principles and experience.

Students may enroll in the Master of Public Administration program on either a full-time or part-time basis. Classes are scheduled in the evening throughout the year. Full-time students may carry more than a normal course load (see page 340) only with permission of their advisers.

## PUBLIC ADMINISTRATION: POLITICAL SCIENCE (POLS)

(600) **POLS 6000. Topics for Graduate Study in Political Science. (1-4G)** Prerequisite: graduate standing. An intensive graduate-level study of a political topic. The particular topic investigated may vary from semester to semester, and a graduate may take more than one course under this number. *(On demand)*

(601) **POLS 6101. Seminar in Urban Politics. (3G)** Competing models of urban politics are considered in the context of the political and socioeconomic development of the city as well as from the perspective of the city as a unit in a complex federal system. Attempts to define the roles of various individuals, officials and groups in urban politics. *(On demand) (Evenings)*

(602) **POLS 6102. Seminar on Urban Problems and Public Policy. (3G)** Examination of substantive problems facing actors in the urban political system and exploration of alternatives to deal with them. Topics may include: urban revenues and expenditures, housing and redevelopment, poverty and human services, crime and law enforcement, environmental protection and public education. *(On demand) (Evenings)*

(627) **POLS 6106. Introduction to Urban Administration. (3G)** An introduction to the basic literature of public administration and consideration of theoretical questions of administration as an independent field of study and practice, particularly as applied to an urban setting. *(On demand) (Evenings)*

(613) **POLS 6113. Organization Theory and Human Behavior in Public Organizations. (3G)** Changing images of people, organizations and organizational environments; research findings and applications related to motivation, leadership, communications, decision-making, group dynamics, interpersonal skills, group problem solving skills; ethics and values. *(On demand) (Evenings)*

(614) **POLS 6114. Changing the Public Organization. (3G)** Overview of concepts and methodologies of organization development, diagnosing organizational needs, change strategies and interventions. *(Spring) (Evenings)*

(620) **POLS 6120. Public Values in Organizational Context. (3G)** Prerequisite: completion of two courses in the MPA program or permission of the instructor. Normative and value considerations important to the study and practice of organizational leadership, ethical systems, and assessment of value systems and the impact of completing value systems on public and organizational policy making. *(Spring) (Evenings)*

(610) **POLS 6125. Quantitative Research Methods in Public Administration. (3G)** Introduction to the use of quantitative analysis in administration. Special emphasis on issues of research design, data collection, elementary statistical analysis, and the interpretation and presentation of research finding. *(Fall) (Evenings)*

(650) **POLS 6127. Policy Analysis. (3G)** Analysis of the policy making process, with particular attention to urban policy making. Development and application of policy analysis methods. *(On demand) (Evenings)*

**POLS 6131. Public Budgeting and Finance. (3G)** (Note: this course combines former POLS 6130 and 6132). An introduction to the basics of public finance and an examination of the theory and practice of public budgeting. Topics to be addressed in this course include: the history and development of public budgeting, the budget processes, the budget cycle, budget reforms, capital budgets, revenue sources, taxation policies and processes, intergovernmental fiscal relations and governmental accounting practices, debt management and cash management in public organizations. *(Fall) (Evenings)*

(632) **POLS 6134. Public Personnel Management (3G)** Study of the context of public personnel administration; basic functions of job evaluation and compensation, employee rights and responsibilities; the legal constraints including equal opportunity, health and safety, collective bargaining; government productivity. *(Fall) (Evenings)*

(641) **POLS 6140. Labor Management Relations in Government. (3G)** Public employee unionization, collective bargaining, unit determination and recognition; negotiation; third-part process; administration of agreements. *(On demand) (Evenings)*

(640) **POLS 6141. Conflict Management in Public Organization. (3G)** The role of the administrator as a focal point in social change and the management of the conflict which occurs. Perspectives on the negotiation and bargaining process will be reviewed. *(On demand) (Evenings)*

(655) **POLS 6155. Seminar in Public Program Evaluation. (3G)** Exploration of the problems of and prospects for evaluating the efficiency, effectiveness and impact of public programs, reviews evaluative research designs and measurement problems, and the attempts to integrate the evaluation function with the planning and budgetary process. *(On demand) (Evenings)*

(611) **POLS 6160. Information Systems in Public Administration. (3G)** A discussion of the nature of information systems in urban administration. Particular attention to developing understanding of administrative control and use of technology, and the processes, policies and issues associated with public information systems. *(On demand) (Evenings)*

(622) **POLS 6170. Law and Urban Policy. (3G)** Role of the judicial process in shaping urban policy and the role of administrative law in influencing behavior of urban policy organizations. *(On demand) (Evenings)*

(685) **POLS 6185. Intergovernmental Relations. (3G)** Survey of the complex relationships of governments in an urban environment set in the federal system. A review of the problems created by that system and the approaches to their solutions. *(On demand) (Evenings)*

(639) **POLS 6187. Advanced Seminar in Public Management Problem Solving. (3G)** Seminar viewed as a capstone to the student's course work in public management and is required to be taken by all students. Seminar devoted to topics in public management which involve problem identification and solution. *(Fall) (Evening)*

**POLS 6196. Urban Systems for School Administrators. (3G)** Corequisite: HIST 6196. An interdepartmental, team-taught course which consists of a survey of the courses and consequences of urbanization in the United States with particular attention to the urban South. Urbanization is treated as a system linking historic, political, economic and social factors, particularly since 1945. *(Summer)*

(690-691) **POLS 6800-6801. Directed Study in Public Administration. (G)** Individual project report on a directed topic of significance based on field experience in public administration. *Pass/No Credit* grading. *(Fall, Spring) (Evenings)*

# Sociology

*Degree:* M.A. *Coordinator:* Raymond J. Michalowski

## MASTER OF ARTS DEGREE IN SOCIOLOGY

The purpose of the Master of Arts degree in sociology is to provide students with the theoretical and methodological skills necessary to undertake systems-level analysis of contemporary social issues and problems. The program is designed to accommodate both full-time and part-time graduate students. Courses are rotated through the evening offerings to serve students who are currently employed and wish to enhance job-related analytical and research skills.

Students may choose a concentration in either Applied Social Research or General Sociology. The concentration in Applied Social Research is designed to meet the needs of students seeking master's level research skills as preparation for entering or achieving mid-career development in occupations requiring social research skills. The concentration in General Sociology provides a broad-based master's level education in sociology for students preparing for further graduate study, high school education issues and social problems. A thesis is required for completion of either concentration.

In addition to taking traditional classroom courses, students can tailor their curriculum in accordance with specific areas of interest through individualized tutorials. These tutorials will involve directed reading and/or research in an area of substantive interest supervised on a one-to-one basis by a faculty member with a specialization in that area.

**Degree Requirements.** Both concentrations require 36 semester hours of course work, comprising nine semester hours of common core courses, 21 semester hours in either the Applied Social Research or the General Sociology concentration, and six semester hours of thesis credit. The 21 semester hours in each concentration includes six semester hours in required courses specific to that concentration. Of the total 36 required semester hours, 27 must be taken in courses open only to graduate students. Students may transfer up to six semester hours of graduate work for which the applicant received a grade of *B* or better from another accredited institution or related UNCC program.

*Core Courses.* The objective of the required core courses is to provide all students with a solid grounding in the theory and methods of sociological inquiry. The core curriculum common to all master's of sociology candidates consists of: SOCY 6651—Continuity and Change (3), SOCY 6652—Issues in Social Research (3), and SOCY 6653—Advanced Quantitative Analysis (3).

### Applied Social Research

The Applied Social Research concentration further develops research skills with particular attention to the skills necessary in non-academic settings, and enables the student to apply these skills to a particular area of specialization such as health care delivery systems, aging, family, legal institutions, labor issues or other topics of interest. Students in the Applied Social Research concentration must complete SOCY 6615—Dilemmas in Organization (3) and SOCY 6617—Data Utilization (3). The remaining 21 hours of the concentration will be devoted to course work in one or more substantive areas of applied research and will include a minimum of six semester hours each in SOCY 6895—Tutorial in Sociology (1-4; can be repeated for credit) and SOCY 6996—Thesis (1-6).

### General Sociology

The concentration in General Sociology develops a comprehensive overview of the substantive areas of sociology. Students in this concentration must complete SOCY 6614—Self and Society (3) and SOCY 6616—Stratification and Inequality (3). The remaining 21 semester hours of the General Sociology concentration will consist of course work in the various substantive areas of sociology including a minimum of six semester hours each in SOCY 6895—Tutorial in Sociology (1-4; can be repeated for credit) and SOCY 6996—Thesis (1-6).

**Admission to Candidacy.** Candidates for admission to the Master of Arts degree in Sociology program must meet all requirements for admission to the Graduate School of The University of North Carolina at Charlotte. In addition, applicants should have:

1.) an overall undergraduate grade point average of 3.0 or better on a 4.0 scale;
2.) a score of 50th percentile or better on the Aptitude Portion of the Graduate Record Examination;
3.) completed a minimum of 18 hours of undergraduate course work in social sciences.

Applicants who fall below one of these criteria and otherwise appear as promising candidates may be admitted on a provisional status by recommendation of the Graduate Committee of the Department.

## SOCIOLOGY (SOCY)

FOLLOWING ARE COURSES DESIGNED PRIMARILY FOR ADVANCED UNDERGRADUATES WHICH ARE AVAILABLE FOR GRADUATE CREDIT. SEE PAGES 207-209 FOR COMPLETE COURSE DESCRIPTIONS.

(490) **SOCY 4090. Topics in Sociology. (1-3) (1-3G)**

(410) **SOCY 4110. Sociology of Aging. (3) (3G)**

(311) **SOCY 4111. Social Inequality. (3) (3G)**

(412) **SOCY 4112. Industrial Sociology. (3) (3G)**

(315) **SOCY 4115. Complex Organizations. (3) (3G)**

(322) **SOCY 4122. Population and Society. (3) (3G)**

(324) **SOCY 4124. Sociology of the Community. (3) (3G)**

**SOCY 4130. Sociology of Health and Illness. (3) (3G)**

**SOCY 4132. Sociology of Sport. (3) (3G)**

(435) **SOCY 4135. Sociology of Education. (3) (3G)**

(354) **SOCY 4154. Theory Construction. (3) (3G)**

(355) **SOCY 4155. Sociological Research Methods. (4) (4G)**

(361) **SOCY 4161. Socialization and Society. (3) (3G)**

(463) **SOCY 4163. Sociology of Sex Roles. (3) (3G)**

(372) **SOCY 4172. Sociology of Deviant Behavior. (3) (3G)**

(373) **SOCY 4173. Juvenile Delinquency. (3) (3G)**

(461) **SOCY 4261. Human Sexuality. (3) (3G)**

(363) **SOCY 4263. Sociology of Small Groups. (3) (3G)**

(420) **SOCY 4620. Seminar in the Sociology of Housing. (3) (3G)**

(534) **SOCY 4631. Seminar in Family Violence. (3) (3G)**

(432) **SOCY 4632. Changing American Family. (3) (3G)**

(456) **SOCY 4656. Seminar in Sociological Research. (3) (3G)**

(495) **SOCY 4895. Directed Individual Study. (1-4) (1-4G)**

**Courses for Graduate Students and Advanced Undergraduates**

(510) **SOCY 5110. Intergroup Relations. (3) (3G)** Prerequisite: SOCY 1101 or consent of Department. Social and social-psychological determinants of intergroup relations; labor-management relations, race relations, social classes, ethnic, national and religious groups. *(On demand)*

(525) **SOCY 5625. Seminar in Urban Sociology. (3) (3G)** Prerequisite: SOCY 1101 or consent of Department. Development and change of urban societies utilizing cross-cultural comparisons of social organization, ecology, demographic composition, social psychological attributes and social problems. *(On demand)*

**Courses for Graduate Students Only**

**SOCY 6614. Self and Society. (3G)** Examination of theoretical constructs and substantive concerns relevant to the socialization process; comparison of symbolic interactionism, ethnomethodology, phenomenology; emphasis on social construction of reality in various "social worlds" (deviant, work, family). *(Alternate years)*

**SOCY 6615. Dilemmas in Organizations. (3G)** Organizational theory and research focused on organizational design, intervention in organizations, and productivity. *(Alternate years)*

**SOCY 6616. Stratification and Inequality. (3G)** Causes, processes and consequences of diverse types of societal inequality; measurement of inequality; assumptions, mechanisms and impact of government policy. *(Alternate years)*

**SOCY 6617. Data Utilization. (3G)** Methodological and statistical strategies for applied sociological research within organizational settings; selecting the best strategies consistent with budgetary, manpower and organizational constraints; interpreting and communicating research results in ways understandable to and useful for organizational decision-makers. *(Alternate years)*

**SOCY 6651. Continuity and Change. (3G)** Analysis of contemporary social theories, with emphasis on their implications for planned change. *(Yearly)*

**SOCY 6652. Issues in Social Research. (3G)** Examination of epistemology of social research; assumptions and methods of specific research strategies; ethical and policy issues of applied and academic research. *(Alternate years)*

**SOCY 6653. Advanced Quantitative Analysis. (3G)** Prerequisites: six hours in Introductory Statistics and/or Research Methods. Contemporary techniques of data analysis, management and processing applied to specific topics; measurement models, data reduction strategies and multivariate procedures. *(Alternate years)*

**SOCY 6895. Tutorial in Sociology. (1-4G)** Prerequisite: permission of instructor. Directed reading and/or research; development of expertise in substantive area. May be repeated for credit. *(Fall, Spring, Summer)*

**SOCY 6996. Thesis. (1-6G)** Prerequisites: completion of all other course work and admission to candidacy by Graduate Committee. Applied, academic, or theoretical research project, defended before graduate faculty. May be repeated for credit up to six hours. *(Fall, Spring, Summer)*

# The Microelectronics Program

*Coordinator:* Edward H. Nicollian

The Microelectronics Program provides an opportunity for graduate-level studies and research in microelectronics at both the master's and doctoral level. Graduate courses available at UNCC cover the entire spectrum of microelectronics ranging from electronic materials and device physics at one end of the spectrum through VLSI design and design tools to microelectronics systems at the other end. Additional course work is available via the Microelectronics Center of North Carolina (MCNC) telecommunications network linking UNCC to other educational institutions participating in MCNC.

Areas of research include solid state devices and materials, integrated circuit processing, analog and digital circuits, artificial intelligence, and vision. The MCNC Central Laboratory has state-of-the-art design and fabrication facilities to support research activities related to microelectronics. Facilities at UNCC include a solid state and semiconductor device physics laboratory, a complete integrated circuit fabrication laboratory, an electrical measurements laboratory, an integrated circuit design facility, and vision and AI laboratories.

Microelectronics students in the College of Engineering or the College of Arts and Sciences may major in one of four departments: Electrical Engineering, Mechanical Engineering and Engineering Science, Computer Science, or Chemistry depending on their particular interest and background in microelectronics. Several typical programs of study toward a master's degree are listed below, but the actual plan of study will be determined by the student's background, interest, and advisory committee.

## MASTER'S DEGREE PROGRAMS AND REQUIREMENTS

### Materials and Fabrication

| | *Semester Hours* |
|---|---|
| Microelectronics Processing and Fabrication I | 3 |
| Microelectronics Processing and Fabrication II | 3 |
| Solid State Theory | 3 |
| Atomic Processes in Solids | 3 |
| Device Electronics for Integrated Circuits | 3 |
| Technical Elective | 3 |
| Advanced Engineering Mathematics I | 3 |
| Advanced Engineering Mathematics II | 3 |
| Thesis | 6 |
| | 30 |

### Solid State Electronics

| | |
|---|---|
| VLSI Systems Design | 3 |
| Device Electronics for Integrated Circuits | 3 |
| Advanced Semiconductor Device Physics | 3 |
| MOS Physics and Technology | 3 |
| Microelectronics Processing and Fabrication I | 3 |
| Technical Elective | 3 |
| Advanced Engineering Mathematics I | 3 |
| Advanced Engineering Mathematics II | 3 |
| Thesis | 6 |
| | 30 |

**Integrated Circuit Design and Testing**

*Semester Hours*

| | |
|---|---|
| VLSI Systems Design | 3 |
| Advanced VLSI Systems Design | 3 |
| Device Electronics for Integrated Circuits | 3 |
| Advanced Microprocessor-based Design | 3 |
| Fault Testable Hardware Design | 3 |
| Technical Elective | 3 |
| Advanced Engineering Mathematics I | 3 |
| Advanced Engineering Mathematics II | 3 |
| Thesis | 6 |
| | 30 |

**Software Aspects of VLSI Design**

| | |
|---|---|
| Computational Aspects of VLSI | 3 |
| VLSI Design Tools | 3 |
| Computer Arithmetic | 3 |
| Advanced Computer Architecture | 3 |
| Data Base Systems Design and Management | 3 |
| Software Systems Design and Implementation | 3 |
| VLSI Systems Design | 3 |
| Technical Elective | 3 |
| Thesis | 6 |
| | 30 |

The technical electives may include courses in the departments of Engineering, Computer Science, Physics, Chemistry, and Mathematics.

Students holding undergraduate degrees in Chemistry may emphasize materials and processing or sensors and instrumental design for the M.S. degree in Chemistry. The M.S. degree in Chemistry is a research-based degree with a thesis required. The thesis research must be in the area of microelectronics to attain the microelectronics emphasis. For a complete description of the requirements for the M.S. degree in Chemistry, see page 335 of this *Catalog*. A typical materials and processing program for a student with an American Chemical Society-certified Bachelor of Science degree in Chemistry is presented below:

**Chemistry**

| | |
|---|---|
| Microelectronics Processing and Fabrication I | 3 |
| Solid State Theory | 3 |
| CHEM 6681 | 1 |
| CHEM 6682 | 1 |
| CHEM (6115, 6125, 6135, 6146—any two) | 6 |
| CHEM 6900 Research and Thesis | 1 to 16 |

For details and possible changes in requirements, students should contact the individual department.

## COOPERATIVE PH.D. PROGRAM IN ENGINEERING

The College of Engineering at UNCC has a cooperative arrangement with North Carolina State University to permit Ph.D. degree candidates located in Charlotte to be enrolled in the Ph.D. program at North Carolina State University. A major feature of this program is that most of the course work and the dissertation research will be carried out at UNCC. Qualified students in the microelectronics program may be recommended for this cooperative program. In addition to the courses available at UNCC, selected doctoral-level courses from other participating institutions are available via the MCNC telecommunications network. See page 386 for complete information on admissions and degree requirements.

## COURSE DESCRIPTIONS

## MICROELECTRONICS PROGRAM

Descriptions of those courses indicated in the preceding typical programs are listed in the various departmental listings except for the following which are now available as special topics courses.

**Microelectronics Processing and Fabrication I.** Historical introduction; review of strategies in VLSI fabrication; review of chemical and physical concepts; equilibrium phase diagrams; crystal growth, wafer preparation; defect in crystals; semiconductor doping; diffusion and ion implantation; thermal and anodic oxidation of semiconductors. Emphasis on silicon technology although GaAs-based device technology will be introduced.

**Microelectronics Processing and Fabrication II.** Continuation of MP&F I. Epitaxial growth techniques; film deposition, metallization; etching methods; photolithographic processes, diagnostic techniques, technological considerations for circuit design; assembly techniques.

**Solid State Theory.** Theories of electrons and phonons in solids. Classical and quantum statistics. Treatment of energy band models. Dispersion relations. Boltzman transport equation. Theories of metals and semiconductors.

**Computational Aspects of VLSI.** Topics include VLSI models, lower bounds of area and time, layout algorithms, algorithm design for VLSI, systolic algorithms, organizations with high wire area, overview of VLSI design systems, compilation of optimization algorithms, algorithm for VLSI design tools.

**VLSI Design Tools.** Topics include design data structures, algorithms; VLSI layout, simulation, test pattern generation; silicon compilers, AI techniques; and use of existing design tools including VIVID and MAGIC.

# Other Courses Carrying Graduate Credit

Several departments within the College of Arts and Sciences, the College of Business Administration, and the College of Education and Allied Professions offer courses carrying graduate credit in areas that do not offer a graduate degree program.

Areas of study, listed alphabetically, are:

Anthropology (Department of Sociology and Anthropology)
Economics
Foreign Languages—including French, German, and Spanish
Library Science (Department of Curriculum and Instruction)
Philosophy
Physics
Political Science
Religious Studies

**Courses numbered 4000-4999** are designed primarily for advanced undergraduates; however, graduate credit is available. Additional work generally is required of graduate students taking 4000-level courses. Only course numbers, titles and credit hours are given for 4000-level courses in this section; complete course descriptions are provided in the undergraduate section of this *Catalog*.

**Courses numbered 5000-5999** are designed primarily for graduate students, although advanced undergraduates may take them for undergraduate credit. Complete course descriptions are given here.

**Courses numbered 6000+** are for graduate students only and complete descriptions are given.

## COURSE DESCRIPTIONS

### ANTHROPOLOGY (ANTH)

**Courses for Advanced Undergraduates and Graduate Students**

(690) **ANTH 4090. Topics in Anthropology. (1-3) (1-3G)**

(420) **ANTH 4120. Intercultural Communications. (3) (3G)**

(321) **ANTH 4121. Culture and Personality. (3) (3G)**

**Courses for Graduate Students Only**

**ANTH 6112. American Indian Studies Through Curriculum Development. (3G)** Cultural descriptions of American Indians by culture area; contact relationships and policies; issues in contemporary Indian affairs presented through lectures, audio-visual materials, workshop activities and field trips. Emphasis on study of American Indian cultures through development of curriculum materials. Designed primarily for public school teachers. *(Summer)*

### ECONOMICS (ECON)

**Courses for Advanced Undergraduates and Graduate Students**

(400) **ECON 4100. Mathematical Economics. (3) (3G)**

(405) **ECON 4105. Negotiations and Bargaining Strategy. (3) (3G)**

(412) **ECON 4112. Econometrics II. (3) (3G)**

(416) **ECON 4116. Public Finance. (3) (3G)**

(435) **ECON 4135. Economics of Development. (3) (3G)**

(450) **ECON 4150. Urban and Regional Economics. (3) (3G)**

(460) **ECON 4160. Economics of Transportation. (3) (3G)**

(471) **ECON 4171. Economics of International Trade. (3) (3G)**

(472) **ECON 4172. Economics of International Finance. (3) (3G)**

(477) **ECON 4177. History of Economic Thought. (3) (3G)**

(480) **ECON 4180. Industrial Organization and Public Policy. (3) (3G)**

(481) **ECON 4181. Energy and Environmental Economics. (3) (3G)**

(482) **ECON 4182. Public Utilities. (3) (3G)**

(449) **ECON 4449. Work-Study Program in Economics. (3-6 or 3-6G hours credit, by determination of Department of Economics.)**

**Courses for Graduate Students and Advanced Undergraduates**

(590) **ECON 5090. Topics in Economics. (1-3) (1-3G)** Prerequisite: consent of the Department. Topics from various areas of economics. Credit hours will vary with the topic offered. May be repeated for credit as topics vary. *(On demand)*

(502) **ECON 5102. Economics for School Teachers. (3) (3G)** Primarily designed for school teachers. Emphasis on issues and examples that lend themselves to classroom presentation. Includes the development, meaning and functioning of institutions that characterize the U.S. economy. May not be taken for upper-level elective credit in business or economics but may be taken for general University elective credit by College of Business majors and others. Not accepted for graduate credit in the MBA program. *(Fall, Spring, Summer)*

## FOREIGN LANGUAGES (FORL)

**Courses for Advanced Undergraduates and Graduate Students**

(400) **FORL 4200. Methods of Teaching a Second Language. (3) (3G)**

### FRENCH (FREN)

**Courses for Advanced Undergraduates and Graduate Students**

(403) **FREN 4003. Studies in French Literature. (3) (3G)**
(405) **FREN 4005. Studies in the French Language. (3) (3G)**
(407) **FREN 4007. Studies in French Culture and Civilization. (3) (3G)**
(401) **FREN 4201. Survey of French Literature I. (3) (3G)**
(402) **FREN 4202. Survey of French Literature II. (3) (3G)**

### GERMAN (GERM)

**Courses for Advanced Undergraduates and Graduate Students**

(410) **GERM 4010. Periods in the History of German Literature. (3) (3G)**
(420) **GERM 4020. The Chief Genres in German Literature. (3) (3G)**
(450) **GERM 4050. Special Topics in German. (1-2-3) (1-2-3G)**
(403) **GERM 4203. Survey of German Literature I. (3) (3G)**
(404) **GERM 4204. Survey of German Literature II. (3) (3G)**

### SPANISH (SPAN)

**Courses for Advanced Undergraduates and Graduate Students**

(450) **SPAN 4050. Selected Readings in Spanish. (1-2-3) (1-2-3G)**
(401) **SPAN 4201. Nineteenth-Century Spanish Literature. (3) (3G)**
(402) **SPAN 4202. Twentieth-Century Spanish Literature. (3) (3G)**
(405) **SPAN 4205. Novel of the Golden Age. (3) (3G)**
(406) **SPAN 4206. Theater of the Golden Age. (3) (3G)**
(410) **SPAN 4210. Studies in Spanish American Poetry. (3) (3G)**
(411) **SPAN 4211. Studies in Spanish American Prose Fiction. (3) (3G)**
(412) **SPAN 4212. Studies in Spanish American Theater. (3) (3G)**
(413) **SPAN 4213. Don Quijote. (3) (3G)**

## LIBRARY SCIENCE (LSCI)

**Courses for Graduate Students and Advanced Undergraduates**

520) **LSCI 5110. Organization and Administration of the School Media Center. (3) (3G)** Acquisition, processing, circulation of materials; student assistance; records and reports; attendance and scheduling; library quarters and equipment, professional relationships, evaluaton of library sciences. *(On demand)*

522) **LSCI 5111. Basic Reference Sources and Materials. (3) (3G)** Selection, evaluation and use of basic reference materials. *(On demand)*

524) **LSCI 5112. Reading Guidance and the Selection of Books and Materials for Children. (3) (3G)** Survey of the development of children's literature, with study of aids and criteria for selection of books and other materials; principles and objectives of reading guidance for the kindergarten and elementary school pupil. *(On demand)*

526) **LSCI 5113. Reading Guidance and the Selection of Books and Related Material for Young People. (3) (3G)** Survey of library materials and principles and objectives of reading guidance, appropriate for the junior high and high school student, with study of aids and criteria for their selection. *(On demand)*

(528) **LSCI 5114. Non-Book Materials. (3) (3G)** Study of the principles and techniques for the selection, acquisition, organization, circulation and use of non-book materials in the library program. *(On demand)*

## PHILOSOPHY (PHIL)

**Courses for Advanced Undergraduates and Graduate Students**

**PHIL 4050. Topics in Philosophy. (3) (3G)**

## PHYSICS (PHYS)

**Courses for Advanced Undergraduates and Graduate Students**

(495) **PHYS 4000. Selected Topics in Physics. (0-4) (0-4G)**
(321) **PHYS 4221. Classical Mechanics I. (3) (3G)**
(421) **PHYS 4222. Classical Mechanics II. (3) (3G)**
(331) **PHYS 4231. Electromagnetic Theory I. (3) (3G)**
(431) **PHYS 4232. Electromagnetic Theory II. (3) (3G)**
(341) **PHYS 4241. Modern Physics. (3) (3G)**
(441) **PHYS 4242. Quantum Mechanics. (3) (3G)**
(345) **PHYS 4251. Thermal Physics. (3) (3G)**
(411) **PHYS 4261. Nuclear Physics. (3) (3G)**
(451) **PHYS 4800. Investigations. (0-2) (1-2G)**

## POLITICAL SCIENCE (POLS)

**Courses for Advanced Undergraduates and Graduate Students**

**POLS 4000. Advanced Topics in Political Science. (1-4) (1-4G)**
**POLS 4183. Fundamentals of Public Administration. (3) (3G)**
**POLS 4184. Public Sector Organization Theory. (3) (3G)**
(399) **POLS 4400. Practicum in Applied Political Science. (1-3) (1-3G)**
(400) **POLS 4800. Independent Study. (1-3) (1-3G)**

**Courses for Graduate Students Only**

(695) **POLS 6195. Robert A. Taft Institute of Government. (3G)** Open under special arrangement. *Pass/No Credit* grading. *(Summer)*

**POLS 6196. Urban Systems for School Administrators. (3G)** Corequisite: HIST 6196. An interdepartmental, team-taught course which consists of a survey of the courses and consequences of urbanization in the United States with particular attention to the urban South. Urbanization is treated as a system linking historic, political, economic and social factors, particularly since 1945. *(Summer)*

## RELIGIOUS STUDIES (RELS)

(690) **RELS 6800. Directed Studies. (3G)** Prerequisite: consent of the instructor. May be repeated for credit. *(Fall, Spring)*

# Directory

# History of
# The University of North Carolina

The University of North Carolina is comprised of all the public institutions of higher education in North Carolina that confer degrees at the baccalaureate level or higher. The University was authorized by the State Constitution in 1776, and it was chartered in 1789 by the General Assembly.

The University of North Carolina opened its doors to students at Chapel Hill in 1795. Thereafter, beginning in the latter part of the 19th century, the General Assembly of North Carolina has established and supported 15 other public senior institutions in keeping with Article IX, Section 8, of the Constitution of North Carolina which provides that the "General Assembly shall maintain a public system of higher education, comprising The University of North Carolina and such other institutions of higher education as the General Assembly may deem wise."

By 1969, The University of North Carolina included six constituent institutions, governed by a single Board of Trustees. This multi-campus University had its beginnings in legislation enacted in 1931 that defined The University of North Carolina to include The University of North Carolina at Chapel Hill, North Carolina State University at Raleigh, and The University of North Carolina at Greensboro. In the 1960's three additional campuses were added: The University of North Carolina at Charlotte, The University of North Carolina at Asheville, and The University of North Carolina at Wilmington.

Beginning in 1877, the General Assembly of North Carolina established or acquired ten additional separately governed state-supported senior institutions of higher education. They are: Appalachian State University, East Carolina University, Elizabeth City State University, Fayetteville State University, North Carolina Agricultural and Technical State University, North Carolina Central University, North Carolina School of the Arts, Pembroke State University, Western Carolina University and Winston-Salem State University. Then, in 1971, the General Assembly redefined The University of North Carolina, and under the terms of that legislation all 16 public senior institutions became constituent institutions of The University of North Carolina.

The constitutionally authorized Board of Trustees of the six-campus University of North Carolina was designated the Board of Governors and this body is by law The University of North Carolina. The Board of Governors consists of 32 members elected by the General Assembly, and it is charged with "the general determination, control, supervision, management, and governance of all affairs of the constituent institutions." The chief executive officer of The University is the President.

Each constituent institution of The University has its own faculty and student body. The chief administrative officer of each institution is the chancellor, and the chancellors are responsible to the President.

Each constituent institution also has a board of trustees composed of 13 members: eight elected by the Board of Governors, four appointed by the Governor, and the elected president of the student body *ex officio*. (The School of the Arts has two additional *ex officio* trustees.) The principal powers of these institutional boards are exercised under a delegation of authority from the Board of Governors.

See page eight for a brief history of The University of North Carolina at Charlotte.

# The University of North Carolina

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**TERM EXPIRES JUNE 30, 1989**

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Douglas W. Booth ..... Charlotte
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Rebecca J. Whitener, B.A., M.B.A. ..... *Internal Auditor*

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Diana Williams, B.S., M.Ed. ..... *Assistant Dean of Students*
Ronald B. Simono, B.S., M.S., Ph.D. ..... *Director of Counseling Center and Health Services*
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Michael Lynch, B.A., M.S., Ph.D. ..... *Counseling Psychologist*
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Elaine Hall, R.N. ..... *Nurse Supervisor*
Martha Kubik, M.S.N. ..... *Nurse Practitioner, Clinical Director*
Gail Smith, B.A., B.S. ..... *Sports Medicine Clinic Coordinator*
Stephanie Columbus, B.S., M.P.H. ..... *Health Educator*
Mildred English, B.A., M.A. ..... *Director, Placement Office*
Joan E. Olstad, B.A., M.S.Ed. ..... *Assistant Director, Placement*
Stephen F. Miller, A.A., B.A., M.Ed. ..... *Job Location and Development Coordinator*
Loy H. Witherspoon, A.B., B.D., Ph.D. ..... *Coordinator, Religious Affairs*
George F. Harpster, Jr., B.S., .S., Ph.D. ..... *Assistant Vice Chancellor and Director of Student Life*
Keith N. Wassum, B.A., M.B.A. ..... *Director, Cone University Center*
Gilbert Crittendon, B.A., M.A. ..... *Associate Director, Cone University Center*
Mayme F. Webb, B.A., M.S. ..... *Associate Director, Cone University Center for Programs*
Mary Jane Phelan, A.A., B.S., M.S. ..... *Assistant Director of Campus Programs*
Vacant ..... *Campus Program Programmer*
Daleen Downs, B.A., M.H.D.L. ..... *Support Services Coordinator*
Arthur A. Kohn, A.S., B.A., M.Ed. ..... *Director, Venture*
Vacant ..... *Assistant Director, Venture*
Wayne Maikranz, B.S., M.A. ..... *Student Media Advisor*
Floyd W. Kerr, B.A., M.A. ..... *Director, Intramurals*
Terrie V. Houck, B.S., M.Ed. ..... *Assistant Director, Intramurals*
Roy R. Fielding, B.A., M.Ed. ..... *Aquatics Director*
Curtis R. Whalen, B.S., M.Ed. ..... *Director, Student Financial Aid*
Brenda V. Holmes, B.A., M.A. ..... *Assistant Director, Student Financial Aid*
Craig Berkley, B.A., M.Ed. ..... *Financial Aid Counselor*
Mary Lou Bennett, B.A. ..... *Financial Aid Counselor*
Jacklyn A. Simpson, B.S., M.Ed. ..... *Director, Residence Life*
Bradley W. Reid, B.S., M.S. ..... *Associate Director of Administration*
Ted J. Phillips, B.A., M.Ed. ..... *Associate Director for Staff and Student Development*
Melissa Graves, B.A., M.Ed. ..... *Assistant Director for Programs*
James M. Hoppa, B.S., M.S. ..... *Assistant Director of Facilities*
Charles Clark, B.A., M.A. ..... *Resident Coordinator of Phase IV and Hawthorn Hall*
Mary Beth Davis, B.S., M.A. ..... *Residence Coordinator of Sanford Hall*

Leonard Edmond, B.A., M.S. ..... *Resident Coordinator of Scott Hall*
Frank Fleming, B.S., M.Ed. ..... *Resident Coordinator of Phase I, II, III*
Debbie LoBiondo, B.S., M.Ed. ..... *Resident Coordinator of Phase V*
Juanita Lutz, B.A., M.Ed. ..... *Resident Coordinator of Holshouser Hall*
Scott Nelson, B.A., M.A. ..... *Resident Coordinator of Moore Hall*

*The following persons are employed by various denominations and churches and are present on campus to serve the spiritual needs of members of the University community.*

Donald S. Rogers, B.A., M.A., B.D. ..... *Baptist*
Vacant ..... *Presbyterian/United Methodist*
Vacant ..... *Catholic*

# Faculty

***Indicates appointment to the Graduate Faculty of The University of North Carolina at Charlotte. Certain appointments, promotions, and resignations are not included.**

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**Leo E. Ells (1975),** *Vice Chancellor for Business Affairs and Lecturer in Business Administration,* B.S., University of Maryland; M.B.A., Syracuse University

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**James H. Werntz, Jr. (1981),** *Vice Chancellor for Academic Affairs and Professor of Physics,* B.A., Oberlin College; M.S., Ph.D., University of Wisconsin

**John David Abell (1985),** *Assistant Professor of Economics,* B.S., Centre College; M.S., Ph.D., University of Kentucky

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# The University of North Carolina at Charlotte

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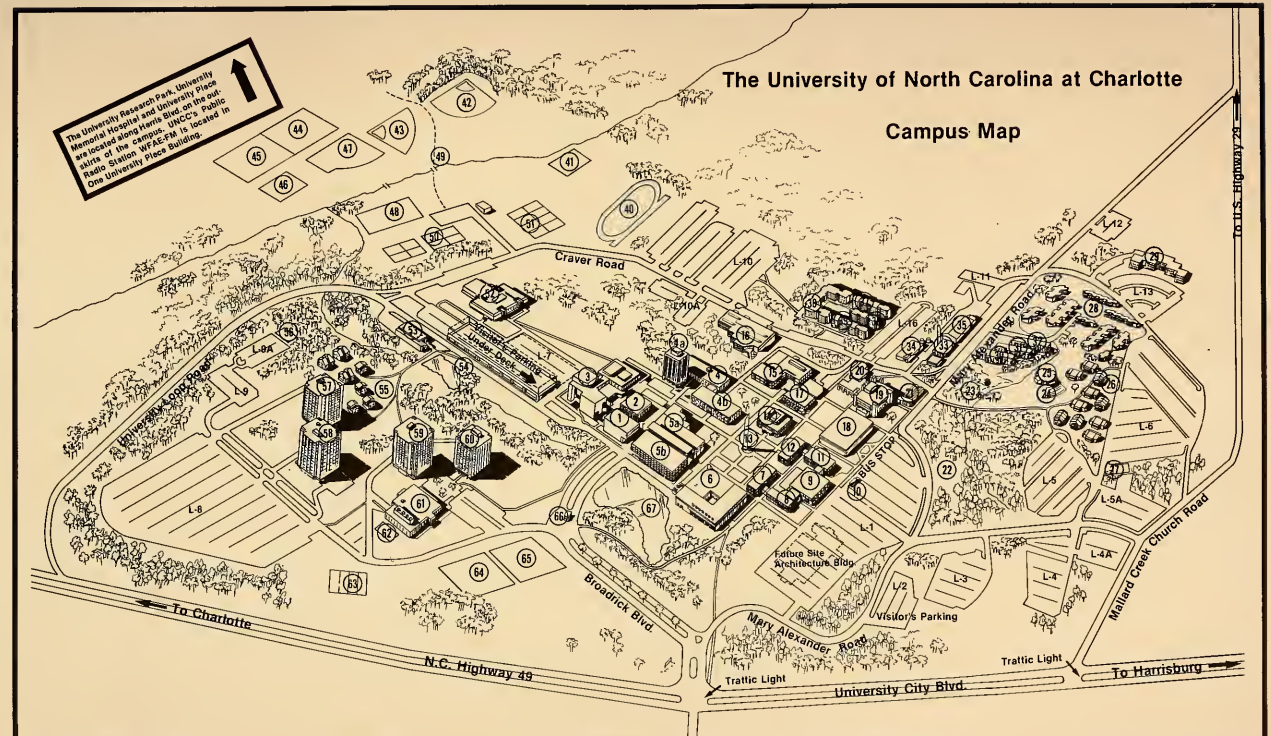


KEY TO CAMPUS FACILITIES

1. Reese Administretion Building
2. A.K. King Building
3. Cone University Center
4. Atkins Library
4e. Delton Library Tower
4b. Atkins Building
5e. Colvard Building North
5b. Colvard Building South
6. Rowe Building
7. Winningham Building
8. Garinger Building
9. Denny Building
10. Autometed Benk Teller
11. Bernard Building
12. Macy Building
13. Belk Tower
14. W.A. Kennedy Building
15. Smith Building
16. Physical Sciences Building
17. Bookstore Building
18. Friday Building
19. McEniry Building
20. Auxiliary Services Building
21. McMillen Greenhouse
22. Van Landingham Glen
23. Susie Harwood Garden
24. Amphitheater
25. Cafeteria/Activities Building
26. Martin Village (H-Q)
27. Volleyball Courts
28. Phase III Apartments (R-Z)
29. Hawthorn Residence Hall
30. Cedar Residence Hall
31. Hickory Residence Hall
32. Sycamore Residence Hall
33. Steam Plant
34. Physical Plant Building
35. Receiving Warehouse
36. Maple Residence Hall
37. Pine Residence Hall
38. Oak Residence Hall
39. Elm Residence Hall
40. Track & Intramural Field (#8)
41. Archery Range
42. Baseball Field (#1)
43. Softball Field (#2)
44. Soccer & Intremurel Field (#4)
45. Intramural Field (#9)
46. Intremural Picnic Area
47. Intramurel Field (#3)
48. Intramural Field (#5)
49. Fitness Trail
50. Tennis Courts
51. Tennis Courts
52. Physical Education & Athletics Building
53. Brocker Health Center
54. Davis Memorial Park
55. Hunt Village (A-G)
56. Volleyball Courts
57. Holshouser Residence Hall
58. Scott Residence Hall
59. Moore Residence Hall
60. Senford Residence Hall
61. Residence Hall Cafeterie
62. Volleyball Courts
63. Tennis Courts
64. Intramural Field (#7)
65. Intramural Field (#6)
66. Information Booth
67. Hechenbleiknor Lake

UNIVERSITY PARKING LOTS

| | | |
|---|---|---|
| L-1 | L-5A | L-10 |
| L-2 | L-6 | L-10A |
| L-3 | L-7 | L-11 |
| L-4 | L-8 | L-12 |
| L-4A | L-9 | L-13 |
| L-5 | L-9A | L-16 |

UNCC

Fourth Class Book Rate

Office of Admissions
The University of North Carolina at Charlotte
Charlotte, N.C. 28223